

Runco WindowWall Installation Guide



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RoHS Compliance Statement

The Runco WindowWalls are fully RoHS compliant.

RuncoCare™ - Standard Two Year Limited Warranty

Congratulations on your purchase of a Runco® product! With proper installation, setup and care, you should enjoy many years of unparalleled video performance.

This RuncoCare Standard Limited Warranty is provided free of charge by Runco International, LLC ("Runco") with the purchase of a covered Runco product. The following sets forth Runco's Standard Limited Warranty applicable to all Runco projectors, processors, LCD display and plasma display products, with the exception of the following models: XP-103DHD, SC1, SC1-a, CW-95DHD and VW-100HD¹. The following terms and conditions of the RuncoCare Standard Limited Warranty represent a contract between us, Runco, and you, the customer, who has purchased a Runco product. This contract applies to purchases of covered Runco products occurring on or after the effective date printed at the bottom of this document. Runco reserves the right to change the terms of this contract, and such changes shall apply to purchases of covered Runco products that occur on or after any future effective date.

RuncoCare Standard Features

- 2-year protection from defects in material and workmanship
- Access to 24x7 phone support
- Complimentary 2nd day one-way shipping

¹ Runco may update this list of products excluded from this warranty from time to time at Runco's sole discretion, but updates to the list of covered products will not apply on a retroactive basis.

Warranty Coverage

Runco warrants its products to be free from defects in material and workmanship during the warranty period provided below. If, in Runco's sole determination, a product proves to be defective in material or workmanship during the warranty period, Runco will repair the product, replace the product with a substantially similar new or like new product, or refund a prorata share of the purchase price (calculated based on the remainder of the warranty period and the then-current MSRP¹ of a similar product), if repair or replacement of the product is determined by Runco to not be feasible. Runco has sole discretion in determining whether a same or like model is offered, and what constitutes as 'substantially similar model'.

Length of Warranty

Runco products are warranted for two (2)-years from the date of shipment from Runco. Lamps are warranted six (6) months from the date of shipment or 1000 hours of use, whichever comes first. All other accessories, which include but are not limited to, cables, remotes, carrying cases, lens cap and other peripherals sold with the Runco product, are warranted for ninety (90) days from the date of the original shipment of the accessory.

Eligibility

This RuncoCare Standard Limited Warranty is valid only for the first customer who purchases the covered product from an authorized Runco dealer or distributor. This warranty is not transferable. You may be required to provide proof of purchase in order to receive warranty services.

RuncoCare Standard Claim Procedure

In the event of a product defect, please follow the warranty claim procedure provided below:

- 1** The customer is required to contact a Runco dealer or Runco Technical Support via email at support@runco.com or via phone at (toll free) 800-23-RUNCO (800-237-8626). If the customer is located outside North America, call +3589 4200 554 in Europe for product service.
- 2** Be prepared to provide the date of purchase, the place of purchase, serial number, product model number, description of the problem and troubleshooting steps already attempted.
- 3** Runco Technical Support staff will attempt to correct any minor issues that may be causing the problem. If Runco is unable to resolve the problem through troubleshooting, a Return Material Authorization (RMA) number will be issued for the exchange of the defective product if it is determined that the claim was made within the coverage period of the Standard Limited Warranty.
- 4** If it is determined that the Standard Limited Warranty applies to the claim, the customer will need to return the defective product to the Runco repair depot location specified by the Runco technical support representative. The customer will need to properly package the defective product, consisting of the product only, and not include any accessories (e.g., cables, remotes, carrying cases, lens, lens cap and other peripherals) and return it to the

¹ MSRP is defined as the most recent product price listed on Runco's price list.

Runco repair depot specified by the technical support representative. It is the customer's responsibility to properly package the hardware, include all appropriate materials, and return it to the location specified by the Runco technical support department. The customer will need to address and resolve any shipping damage claims directly with the shipping company.

- 5 The customer is responsible for providing a suitable box to ship the defective product to an authorized Runco repair depot. Boxes may be purchased from a Runco technical support representative.
- 6 The customer is responsible for paying freight charges to ship the defective product to an authorized Runco repair depot.
- 7 For in-warranty repairs, Runco will pay freight charges to return the repaired/replacement product (which shall not include accessories--e.g., cables, remotes, carrying cases, lens cap and other peripherals sold with the Runco product) to the customer from the Runco repair depot.
- 8 Once an RMA has been created, the customer may contact serviceorders@runco.com for follow-up questions or confirmation status of the claim process.

Warranty Exclusions

This RuncoCare Standard Limited Warranty does not include or is limited by the following:

- 1 Products not purchased from an authorized Runco dealer
- 2 Rental costs incurred by the customer in the event of product defect or failure
- 3 Any product with a defaced, modified, or removed serial number
- 4 Damage, deterioration, or malfunction resulting from:
 - a Accident, abuse, misuse, neglect, improper ventilation, fire, water, disaster, lightning, or other acts of nature, smoke exposure (cigarette or otherwise), unauthorized product modification (including use of an unauthorized mount), or failure to follow instructions supplied with the product
 - b Repair or attempted repair by anyone not authorized by Runco
 - c Any damage to the product due to shipment
 - d Removal or installation of the product
 - e Causes external to the product, such as electric power fluctuations or failure
 - f Use of supplies or parts (including lamps) that are not purchased from Runco or do not meet Runco's specifications
 - g Normal wear and tear
 - h Expected lamp degradation and normal decrease in lamp output over a period of time or as the lamp is consumed
 - i Customer caused defects, including but not limited to, scratched/defaced/altered plastics
 - j Failure to follow maintenance procedures as outlined in the product's user guide where a schedule is specified for regular cleaning of the product

- k** Opening the product and/or tampering with internal circuitry
 - l** Products lost, stolen or discarded
 - m** Any damage or dissatisfaction associated with latent images, "burn-in," or any other damage determined by Runco to be the result of customer use patterns
 - n** Any other cause, which does not relate to a product defect in material or workmanship
- 5** Removal, installation, and set-up service charges are excluded from this Standard Limited warranty
 - 6** Black uniformity issues or other LCD issues associated with usage outside the Runco recommended guidelines and specifications for the product
 - 7** Bright or dark sub pixels that are characteristic of LCD technology and considered by Runco to be acceptable and within Runco's manufacturing specifications. (See Sub Pixel Policy below)
 - 8** Second day shipment delivery time and availability may vary based on origin and destination and Runco is unable to deliver to PO Box and FPO Box addresses

Sub Pixel Policy

It is not uncommon for one or more sub pixels to become bright or dark during or after the manufacturing process. A bright sub pixel is one that remains in the on position, and a dark sub pixel is one that appears black or off. The sub pixels are usually hard to see and will not detract from the display quality or usability at normal viewing distance. The following are Runco's criteria for identifying bright or dark sub pixels that would be considered unacceptable: a) the number of bright or dark sub pixels; b) the location of the bright or dark sub pixels; c) the color of the bright sub pixels; and d) the Runco model size. If sub pixels have been identified as unacceptable by Runco the LCD will be deemed faulty and will be replaced if reported within the warranty period. If there are issues with bright or dark sub pixels, gather the information listed above and call or email support@Runco.com.

Other Terms and Conditions

- 1** Runco will not accept returned Product unless an RMA number has been issued by Runco.
- 2** If an Advance Exchange return occurs, it is the customer's responsibility to properly package the defective product and ship it to the address provided by the Runco technical support representative with the RMA number prominently displayed. If the defective product is not properly packaged and is damaged in transit during its return to Runco, you may be invoiced for either the repair costs, if repairable, or the MSRP of a replacement product and shipping costs incurred by Runco.
- 3** The repaired or replaced product will assume the remainder of your original product's RuncoCare Service Plan term or 90 days from the date the repaired unit is shipped, whichever is longer.
- 4** If a replacement product is sent, the customer agrees to retain the replacement for the product you purchased and your defective product becomes the property of Runco.

Extended Service Options

Runco offers extended and expanded service plans. For information on additional product protection, please email serviceorders@runco.com or call (toll free) 800-23-RUNCO (800-237-8626).

Online Product Registration

Please visit <http://www.runco.com/support/product-registration/> to register product.

Limitation of Implied Warranties

RUNCO PROVIDES NO WARRANTIES, EXPRESS OR IMPLIED, EXCEPT THOSE EXPRESSLY PROVIDED HEREIN. RUNCO EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Exclusion of Damages

RUNCO'S MAXIMUM AGGREGATE LIABILITY HEREUNDER IS LIMITED TO THE COST OF REPAIR OR REPLACEMENT OF THE PRODUCT.

Exclusion of Damages (continued)

- 1** RUNCO SHALL NOT BE LIABLE FOR DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECT IN THE PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, LOSS OF PROFITS, LOSS OF BUSINESS OPPORTUNITY, LOSS OF GOODWILL, INTERFERENCE WITH BUSINESS RELATIONSHIPS, OR OTHER COMMERCIAL LOSS, EVEN IF THE CUSTOMER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.
- 2** RUNCO SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES ANY OTHER DAMAGES, WHETHER INCIDENTAL, INDIRECT, CONSEQUENTIAL OR OTHERWISE.
- 3** SHALL NOT BE LIABLE FOR ANY CLAIM AGAINST THE CUSTOMER BY ANY OTHER PARTY.

Effect of Local Law

This warranty gives you specific legal rights, and you may have other rights, which vary from locality to locality. Some localities do not allow limitations on implied warranties and/or do not allow the exclusion of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

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Introduction

The Runco WindowWall display wall uses cutting edge technology to provide a video wall solution using commercial-grade 46" LCDs in a tiled application. The narrow-bezel results in a 7.3mm pixel-to-pixel gap between images on adjacent tiles in a video wall. Each LCD tile is a WXGA format, with a 1366 x 768 resolution. Each LCD tile is 4.14" deep and has an aspect ratio of 1.77 (16:9). It accepts virtually all video formats from 480i to 1080p to UXGA, from a wide range of video sources including composite, component, DVI and HDMI.

The TileAlign™ mounting system supports landscape and portrait orientation, free-standing wall deployment and flying wall applications. Because the tiles are self-supporting, Runco WindowWall can support unlimited stacking height.



Caution: This manual is intended for use by qualified service persons and end users with experience installing LCD displays.

Safety Information

This display was designed with safety in mind. If you don't heed the safety warnings and cautions, you could get hurt. The safety warnings are on stickers in various places in and on the display.



Important Safety Instructions

- 1 Read these instructions.
- 2 Keep these instructions.
- 3 Heed all warnings.
- 4 Follow all instructions.
- 5 Do not use any of the Runco WindowWall display wall products near water.
- 6 Clean the LCD screens with an LCD screen cleaner or LCD wipes.
- 7 Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
- 8 Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for the replacement of the obsolete outlet.
- 9 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from any of the Runco WindowWall display wall products.

- 10 Only use the attachments/accessories specified by the manufacturer.
- 11 Unplug all Runco WindowWall display wall products during lightning storms or when unused for long periods of time.
- 12 You must follow all National Electrical Code regulations. In addition, be aware of local codes and ordinances when installing your system.
- 13 Refer all servicing to qualified service personnel. Servicing is required when any of the Runco WindowWall display wall products have been damaged in any way, such as the AC power cord or plug is damaged, liquid has been spilled or objects have fallen into a product, the products have been exposed to rain or moisture, do not operate normally or have been dropped.
- 14 Keep the packing material in case the equipment should ever need to be shipped.
- 15 Wall mounts must be secure. The wall must be strong enough to hold all LCD tiles, brackets and cables. The LCD tile weighs about 48lbs (22kg).
- 16 Slight pressure on the LCD will cause distortion of the image. Heavier pressure will cause permanent damage. Runco WindowWalls should be mounted where viewers cannot touch the screen or insert small objects in the openings that will create hazards by contacting bare conductive parts.

Caution: The front polarizer is soft and subject to scratches from sharp objects.

- 17 The polarizer is a thin sheet of film laminated to the outside layer of glass on the LCD screen. Take care when handling items near the screen.

Caution: This product contains a lithium battery. There is a risk of explosion if the battery is replaced by an incorrect type. Dispose of the battery according to the instructions on the next page.

WARNING The backlight contains mercury.



Lamp(s) inside this product contain mercury. This product may contain other electronic waste that can be hazardous if not disposed of properly. Recycle or dispose in accordance with local, state, or federal Laws. For more information, contact the Electronic Industries Alliance at www.eiae.org. For lamp specific disposal information, check www.lamprecycle.org.

European Union Disposal Information

English

Français

Deutsch

Disposal of old Electrical & Electronic Equipment (Applicable throughout the European Union and other European countries with separate collection programs)

This symbol found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources.

This symbol is only valid in the European Union. If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

Español

Deshecho de equipos eléctricos y electrónicos (aplicable a la Unión Europea y a otros países europeos con programas de reciclaje independientes)

La presencia de este símbolo en el propio producto o en su material de embalaje, indica que no se debe tratar como residuo doméstico cuando desee deshacerse de él. En su lugar, debe entregarlo en el punto limpio correspondiente de reciclaje de equipos eléctricos y electrónicos. Asegurándose de que este producto se desecha de forma correcta, ayudará a evitar posibles consecuencias negativas para la conservación del medioambiente y la salud humana, consecuencias que podrían darse si se desecha del producto de forma inadecuada. El reciclado de materiales ayuda a conservar los recursos naturales.

Este símbolo solamente es válido en la Unión Europea. Si desea deshacerse de este producto, póngase en contacto con las autoridades locales o con su distribuidor y pida información sobre el método de disposición adecuado.

Português

Eliminação de equipamentos eléctricos e electrónicos usados (aplicable na União Europeia e noutros países europeus com programas próprios de recolha destes equipamentos)

Este símbolo, colocado no produto ou na respectiva embalagem, indica que o produto não deve ser tratado como lixo doméstico quando da sua eliminação. Em vez disso, deve ser entregue num ponto de recolha de equipamentos eléctricos e electrónicos para posterior reciclagem. Ao garantir a correcta eliminação deste produto, estará a evitar consequências potencialmente negativas tanto para o ambiente como para a saúde humana. A reciclagem de materiais ajuda a preservar os recursos naturais.

Este símbolo apenas é válido na União Europeia. Se quiser eliminar este produto, contacte as entidades locais ou o seu fornecedor para ficar a saber qual o método de eliminação correcto.

Svenska

Avfall av förbrukad elektrisk och elektronisk utrustning (Tillämpligt i hela Europeiska unionen och andra europeiska länder med separata samlingsprogram)

Den här symbolen som finns på din produkt eller på dess förpackning påvisar att produkten inte ska behandlas som hushållsavfall när du vill slänga bort den. Istället ska den lämnas över till en lämplig uppsamlingspunkt för återvinning av elektriska och elektroniska utrustningar. Genom att tillförsäkra att den här produkten återvinns på ett riktigt sätt hjälper du till med att förhindra möjliga negativa konsekvenser för miljön och mänsklig hälsa. Det kan annars orsakas på grund av olämplig sophantering av den här produkten. Återvinning av material kommer att hjälpa till att bevara naturtillgångar.

Den här symbolen är endast giltig inom den Europeiska unionen. Om du vill slänga bort den här produkten ska du kontakta lokala myndigheter eller återförsäljare, och fråga efter lämplig avfallsmetod.

Mise au rebut des équipements électriques et électroniques usagés (Valable dans l'ensemble de l'Union Européenne ainsi que dans les pays européens disposant de programmes distincts de collecte des déchets)

Ce symbole appliqué sur votre produit ou sur son emballage indique que ce produit ne doit pas être traité comme un déchet ménager lorsque vous voulez le mettre au rebut. Il doit au contraire être remis à un site de collecte agréé pour le recyclage des équipements électriques et électroniques. En veillant à ce que ce produit soit mis au rebut de façon adéquate, vous contribuerez à prévenir les conséquences potentiellement négatives sur l'environnement et sur la santé humaine qui risqueraient de se produire en cas de mise au rebut inappropriée de ce produit. Le recyclage des matériaux contribuera également à économiser les ressources naturelles.

Ce symbole n'est valable que dans l'Union Européenne. Si vous souhaitez mettre ce produit au rebut, veuillez prendre contact avec les autorités locales ou avec votre revendeur et renseignez-vous sur la méthode de mise au rebut correcte.

Italiano

Smaltimento delle attrezzature elettriche ed elettroniche usate (applicabile in tutta la Comunità Europea ed altri Paesi Europei che applicano programmi di raccolta differenziata)

Il simbolo trovato sul prodotto, o sulla sua confezione, indica che il prodotto non può essere trattato come i domestici quando è il momento di smaltirlo. Al contrario, deve essere consegnato ad un centro di raccolta specializzato nel riciclaggio di attrezzature elettriche ed elettroniche. Assicurando che il corretto smaltimento di questo prodotto, si aiuterà a prevenire potenziali conseguenze negative sull'ambiente e sulla salute umana, che possono essere provocate da uno scorretto smaltimento di questa attrezzatura. I materiali riciclati aiuteranno a conservare le risorse naturali.

Questo simbolo è valido solo nell'Unione Europea. Per smaltire questo prodotto, mettersi in contatto con le autorità locali - o con il rivenditore - e chiedere informazioni sul corretto metodo di smaltimento.

Polski

Ustawienie zużytego sprzętu elektrycznego i elektronicznego (Dotyczy krajów Unii Europejskiej i innych krajów europejskich z oddzielnymi programami zbiórki odpadów)

Obecność tego symbolu na produkcie lub na opakowaniu z produktem oznacza, że tego produktu nie można wyrzucać razem z odpadami domowymi. Należy go przekazać do punktu zbiórki w celu poddania recyklingowi podzespołów elektrycznych i elektronicznych. Usunięcie tego produktu w prawidłowy sposób, pomoże w zabezpieczeniu przed negatywnym wpływem odpadów na środowisko i zdrowie ludzi, powodowanym przez niewłaściwe użycie produktu. Przetwarzanie materiałów pomaga w zachowaniu zasobów naturalnych.

Ten symbol obowiązuje wyłącznie w krajach Unii Europejskiej. Informacje dotyczące prawidłowej metody usunięcia tego produktu, można uzyskać u władz lokalnych lub u dostawcy.

Suomi

Vanhjojen sähkö- ja elektroniikkalaitteiden hävittäminen (Soveltuvaa kaikilla Euroopan unionin alueella, sekä muissa Euroopan maissa, joilla on erilliset keräysohjelmat)

Jos tuotteesta tai sen pakkauksesta on tämä symboli, sitä ei pidä hävittää tavallisella tavalla kotona tai muualla, vaan se kuuluu toimittaa sähkö- ja elektroniikkalaitteiden kierrätyspisteeseen. Varmistamalla, että tämä tuote hävitetään asiaankuuluvalla tavalla autat estämään mahdollisia ympäristölle ja ihmisille kovia negatiivisia seurauksia, joita sen väärinlaitteen hävittäminen voi aiheuttaa. Materiaalien kierrättäminen auttaa säilyttämään luonnonvarjoja.

Tämä symboli on voimassa ainoastaan Euroopan unionin alueella. Jos haluat hävittää tämän tuotteen, ota yhteyttä paikallisiin viranomaisiin tai jälleenmyyjään ja tiedustele asiaankuuluvia hävittämistapoja.

Entsorgung von elektrischen & elektronischen Altgeräten (gültig für die europäische Gemeinschaft und andere europäische Länder mit separaten Sammelprogrammen)

Dieses Symbol, zu finden auf Ihrem Produkt oder dessen Verpackung, macht Sie darauf aufmerksam, dass dieses Produkt bei der Entsorgung nicht als Hausmüll behandelt werden darf. Statt dessen sollte es an eine Sammelstelle zum Recycling von elektrischen und elektronischen Altgeräten gegeben werden. Helfen Sie mit, potenziell schädliche Einflüsse auf Umwelt und Gesundheit, die durch eine unsachgemäße Entsorgung dieses Produktes entstehen können, zu vermeiden und entsorgen Sie dieses Produkt ordnungsgemäß. Recycling hilft, natürliche Rohstoffe einzusparen.

Dieses Symbol ist nur innerhalb der europäischen Gemeinschaft gültig. Wenn Sie dieses Produkt entsorgen möchten, wenden Sie sich bitte an Ihre örtliche Behörde und fragen Sie nach der ordnungsgemäßen Entsorgungsmethode.

Nederlands

Verwijderen van oude elektrische en elektronische apparatuur (toepasselijk in de volledige Europese Unie en andere Europese landen met afzonderlijke programma's voor afvalverzameling)

Dit symbool dat op het product of zijn verpakking is aangebracht, geeft aan dat dit product niet mag worden behandeld als huishoudelijk afval als u het wilt weggooien. U moet het afgeven bij een specifiek verzamelpunt voor de recycling van elektrische en elektronische apparatuur. Door te garanderen dat u dit product op de correcte manier weggooit, helpt u potentiële negatieve gevolgen voor het milieu en de menselijke gezondheid, die zouden kunnen worden veroorzaakt door een onrechtmatig weggooien van het product, te voorkomen. De recycling van materialen helpt het behoud van natuurlijke bronnen.

Dit symbool is alleen geldig in de Europese Unie. Als u dit product wilt weg te gooien, dient u contact op te nemen met uw lokale instanties voor details over de gepaste methode voor afvalverwijdering.

Recommended Usage

In order to get the most out of your LCD tiles, use the following recommended guidelines to optimize the display.

Burn-In Versus Temporary Image Retention

Burn-in causes the screen to retain an image essentially forever, with little or no way to correct the problem. Under normal use, an LCD tile will not experience burn-in, as plasma displays do, nor will it retain images in any way.

Normal use of an LCD tile is defined as displaying continuously changing video patterns or images. However, LCD tiles can experience *temporary* image retention when recommended usage guidelines are not followed.

What is Temporary Image Retention?

Temporary image retention (TIR) can occur when a static image is displayed continuously for extended periods of time (12 hours or longer). An electrical charge differential may build up between the electrodes of the liquid crystal, which causes a negative-color video image (color-inverted and brightness-inverted version of the previous image) to be retained when a new image is displayed. This behavior is true for any LCD device from any LCD manufacturer.

Here are some guidelines to help you avoid TIR:

- Use the LCD tile to show a screen saver, moving images or still pictures that change regularly. When using high-contrast images, reposition the images frequently.
- Turn off the LCD tile when it is not in use. There are several ways to do this automatically:
- To use your source computer's Power Options Properties, set up your computer to turn off the monitor when not in use. You also need to check the DPMS checkbox and set the DPMS DELAY box in the BACKLIGHT SETTINGS menu.

Caution: We suggest turning off the backlight power for four hours per day. Normal use of any LCD device does not cause TIR.

Normal Use Thermal Guidelines

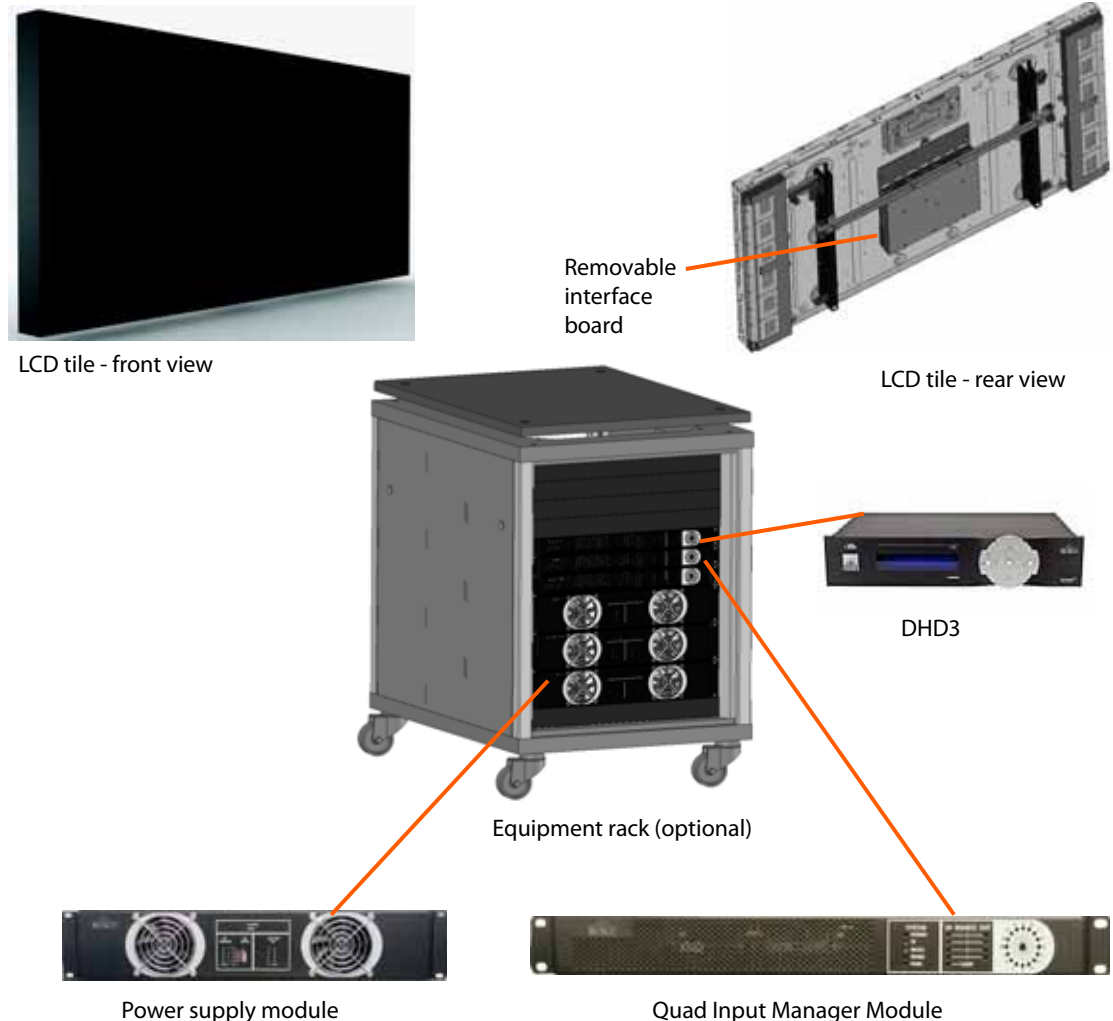
Normal use of the LCD tile, Quad Input Manager Module and power supply module are defined as operating in the open air to prevent heat buildup, and without direct or indirect heat sources such as lighting fixtures, heating ducts, or direct sunlight that can cause the modules to experience high operating temperatures. For all modules, do not block fans or ventilation openings. At 2000 meters or below, the maximum ambient operating temperature for the LCD tile cannot be above 35° C nor below the minimum ambient operating temperature of 0° C. For the Quad Input Manager Module and power supply module, the maximum ambient operating temperature cannot be above 45° C nor below the minimum ambient operating temperature of 0° C. If one of these conditions exists, it is up to the installer to ensure that module placement is changed, thermal shielding is provided and/or additional ventilation is provided to keep the display within its nominal operating parameters.

Cooling Requirements

For optimal performance, active cooling by the installer should be planned for when the ambient temperature at the top of the wall is predicted to be above the specified ambient temperature for the tile. Cooling may be done behind the displays and depending on the wall configuration, it may be helpful to place air ducts (AC) at every third display tall.

System Architecture

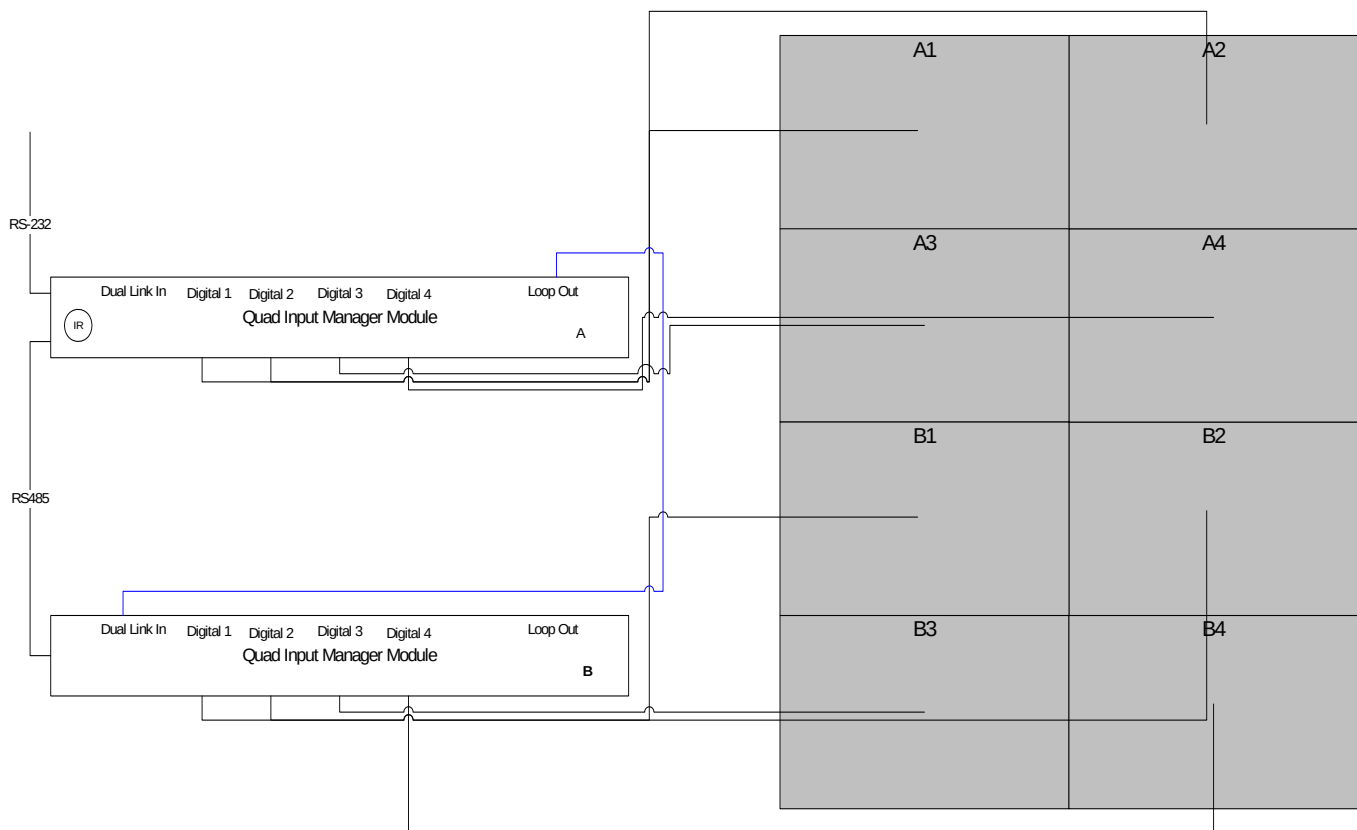
The Runco WindowWall has three main electronic components: the LCD tile, power supply module and the Quad Input Manager Module. The LCD tile has a removable interface board, which connects to the off-board power supply and Quad Input Manager Modules. Using external modules produces less heat and allows for reduced and/or easier service of the LCD tile itself.



Some basic points to keep in mind:

- Each Quad Input Manager Module controls up to four LCDs
- Modules are linked together by RS485 cables
- The first processor in the A Quad Input Manager Module (A1) is the master processor
- The master processor takes in the input from the remote and/or the host RS232
- The DHD3 is an integral part of the configuration and can be attached to a Quad Input Manager Module for Runco's highest quality video input management, scaling, and processing

The following example shows the connections for a basic video wall.



TileAlign Mounts, General Description

Runco-supplied mounts are used to secure the Runco WindowWall for display. Follow these instructions carefully.

Keep in mind the following general installation guidelines:

- Prior to installation, make sure you know where all of the mounting points are located.
- Follow all safety precautions outlined in this manual.

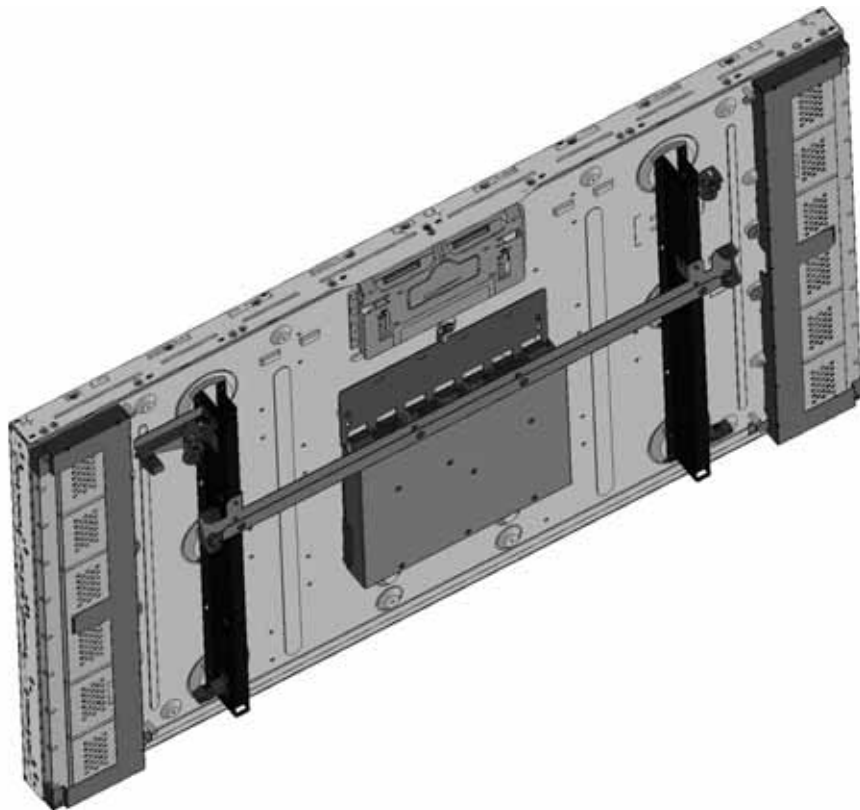
Verify the parts received with the list shown in this manual.

Runco WindowWall

The Runco WindowWall display wall consists of several different modules. These are described in more detail on the following pages.

LCD Tiles

The LCD tile is composed of a basic LCD without a cosmetic enclosure but with a mechanical subframe for mounting. The LCD tiles incorporate a simple interface board designed to distribute off-board power, video and control signals to the LCD tile keeping depth, weight, heat and points of potential failure to a minimum. The LCD blade-style module incorporates a bracket that is perfectly paired with the TileAlign™ mount. The LCD tile includes TileAlign adjusters that facilitate precise 6-axis alignment ensuring uniform, minimized image-to-image gap.



LCD Mounting Structure

The TileAlign mounting system simplifies the task of installing and aligning the LCD tiles while allowing for efficient in-wall service. TileAlign is designed to be attached to a wall, used with optional free-standing bases or secured overhead in a flying configuration. When assembled, horizontal and vertical connection brackets ensure that each mount is perfectly spaced from its neighbor in the video wall. The mount system also incorporates a service mode to accommodate front and rear in-wall repair of any LCD tile in the video wall.



TileAlign mounts are designed to facilitate the thinnest profile LCD video wall. The combination of the mount plus the Runco WindowWall LCD tiles “blade” design results in video walls that measure a 4.5 inches in depth, screen to wall.

Off-Board Equipment and Components

To reduce heat issues and to make servicing of the video wall easier, the two main Runco WindowWall components are modules that are separate from the LCD tile itself. The Quad Input Manager Modules and power supply modules can be housed in an equipment rack that is typically situated away from the video wall itself.

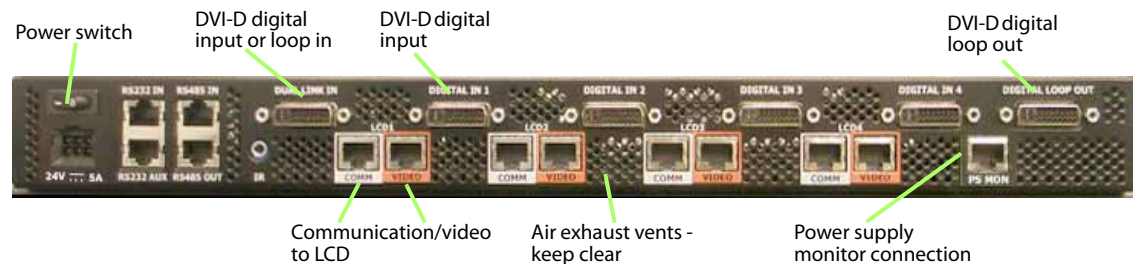
Quad Input Manager Module

The Quad Input Manager Module contains four microprocessors, each of which manages the video information flowing to one LCD tile. The Quad Input Manager Module routes up to four digital source inputs to the LCDs.

Front View



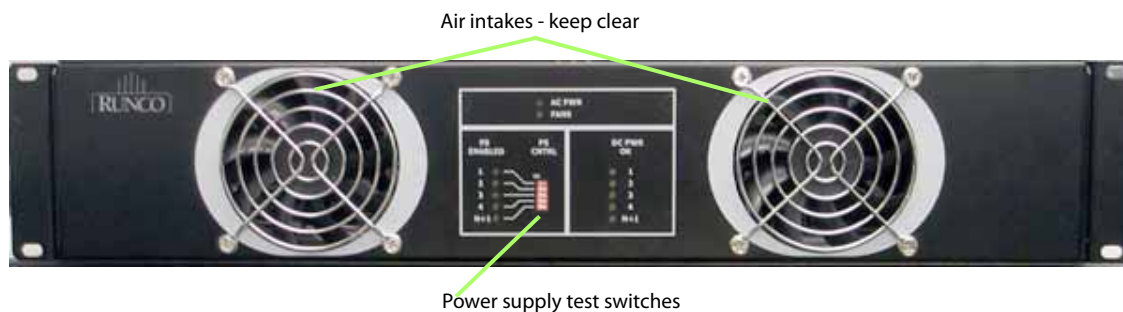
Rear View



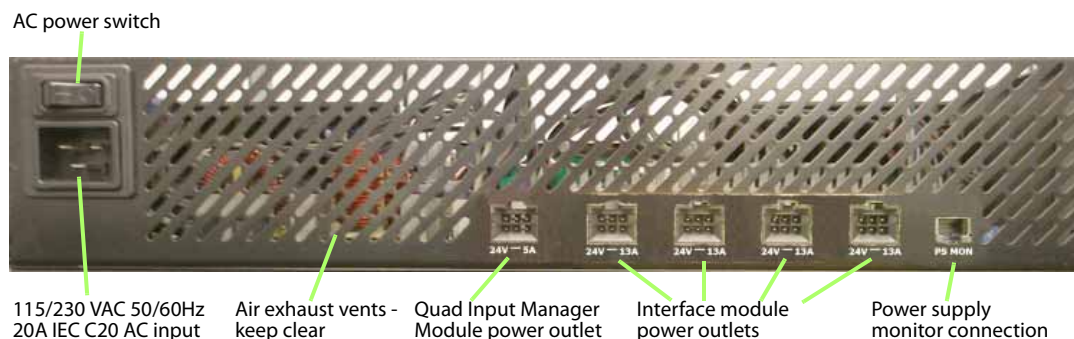
Power Supply Module

The power supply module provides power for up to four LCDs and one Quad Input Manager Module.

Front View



Rear View



DHD3 Processor

The DHD3 is an integral part of the configuration and can be attached to a Quad Input Manager Module for Runco's highest quality video input management, scaling, and processing.



Equipment Rack (Optional)

Runco's optional equipment rack easily stores the Quad Input Manager Modules and the power supply modules. The open rear design allows you to route cables from the rear of the modules to the LCDs.



Installing a Runco WindowWall

This section explains how to install a Runco WindowWall. We suggest that you read the entire section before you attempt to install the wall.

Before You Begin

Make sure you have all the items in these lists before you begin unpacking and installing your Runco WindowWall(s).

Tools/Equipment List

Depending on your installation, you may need one or more of the following items:

- Drill and bits
- Nut drivers
- Pencil
- 3mm hex key
- M6 (#1/4-20) wrench
- String/string level
- Digital/laser level
- Ladders/lift
- Back brace
- Stud finder (if hanging LCD tiles on a wall)
- Quad Input Manager Module address adjustment tool

Other Things You May Need

- LCD screen cleaner or LCD wipes - available at most electronics stores
- At least two capable people to lift LCD tiles into place

Plan Your Installation

You should have a detailed plan of how the displays are to be configured. The plan should include calculations for the following:

- Floor/wall load. Make sure the floor/wall is strong enough to support the weight of the whole Runco WindowWall system.
- Each power supply module requires a 20A circuit for 115V operation.
- At least 8" (203mm) of space above the LCDs so they can be moved up and open for service. The recommended amount of space is 10" (254mm).
- Access to both sides of the Quad Input Manager Module and the power supply module.
- Cable runs
- Ventilation and cooling requirements. Although most of the heating elements are not in the LCD itself, it is still important that you have proper cooling and ventilation for the entire Runco WindowWall and its off-board components.

Prepare Your Installation Location

You should have prepared the area where you will install the LCD tiles. The mounting structures must be fully designed to accommodate the installation of the LCD tiles. You must also make sure there is enough room for the off-board components and any equipment racks that might house these components.

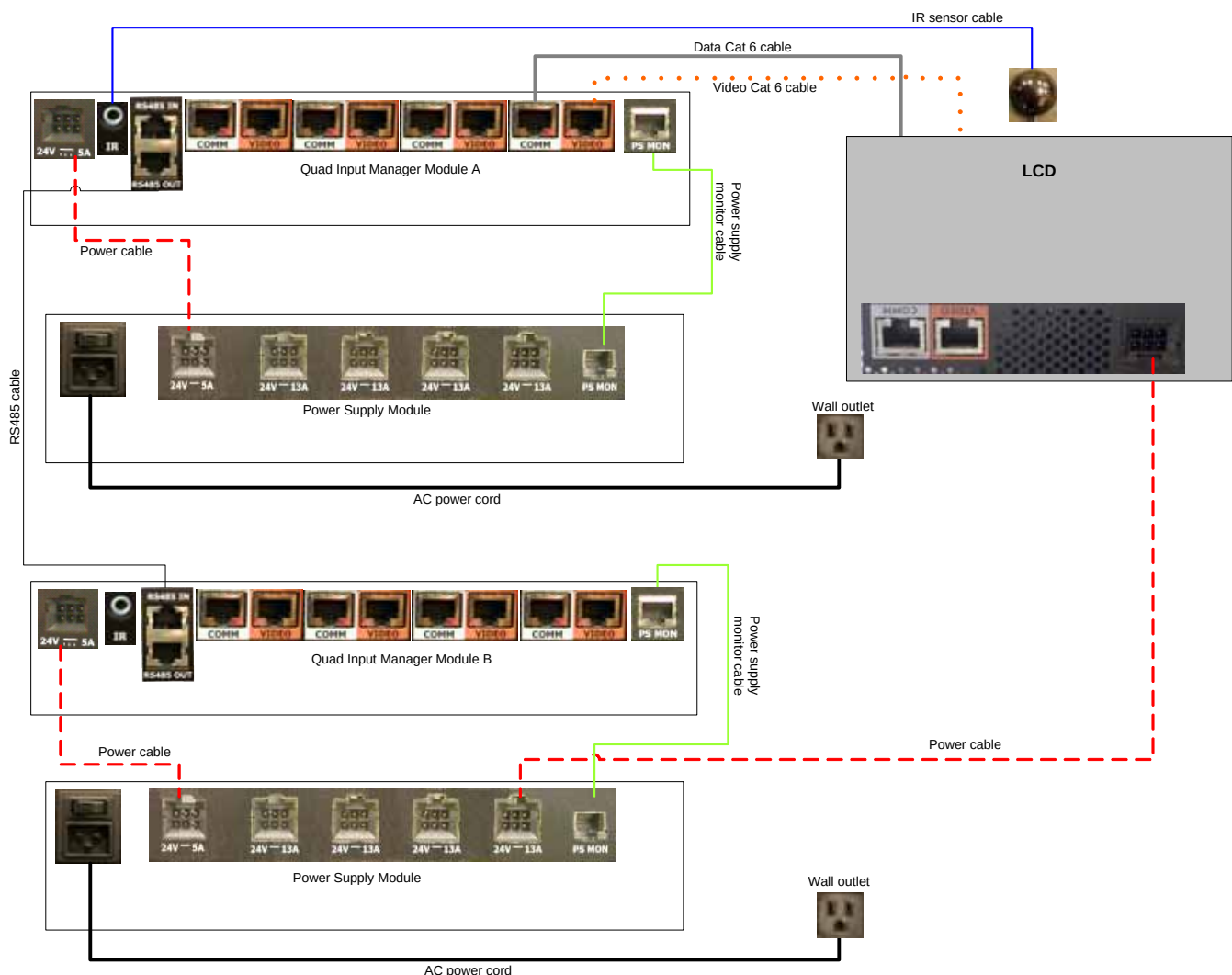
Installation Checklist

Use this quick checklist to ensure you have performed the installation steps in the correct order.

- 1 Unpack and install the LCD mount brackets.
- 2 Install Quad Input Manager Modules and power supply modules.
- 3 Run cables between LCD mount and brackets.
- 4 Install LCD tiles.

Unpacking and Checking Accessories

The following diagram shows a basic connection of the different cables that connect to the different modules.

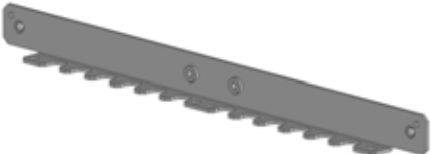


The following list are includes items found in your shipment boxes.

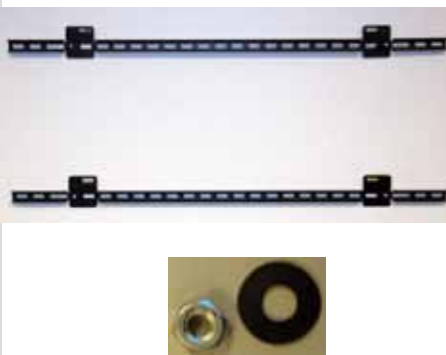
Part	Description	Per Quad/Power Supply	Picture
Quad Input Manager Module	Routes up to four digital source images to the LCDs.	1	
Power supply module	Supplies power for up to four LCDs and one Quad Input Manager Module.	1	
Power cable (4ft)	Connects the power supply module to the Quad Input Manager Module.	1	
RJ45 to RJ45 patch cable (1m)	One cable connects the PS MON outlets from one Quad Input Manager Module to another. The other cable connects from one Quad Input Manager Module to another.	2	

Note: It is highly recommended that you use the cable label maker to identify each cable before it is installed.

Part	Description	Picture
LCD tile	1 or 2 per box depending on your order.	
LCD mount	1 or 2 per box depending on your order.	

Part	Description	Number	Picture
Vertical bracket	Secures the LCD mount.	Depends on configuration requirements.	
Horizontal bracket	Secures the LCD mount.	Depends on configuration requirements.	
AC power cable (3m)	Depending on your order, cable will be for use in North America or Europe.	1 per power supply module	
Gloves	Used to handle LCDs.	Pair	
Remote control	Used to control your on-screen menus.	1	

Part	Description	Number	Picture
Installation manual	Provides detailed setup and configuration information.	1	
IR sensor	Connects to Quad Input Manager Module A. Mount in a convenient location near your wall. Typically, this might be near the master (A1) display.	1	
Cable labels	Used to help you identify each cable.	1 dispenser of 150 labels	
M6 Alignment adjustment tool	Used to align modules.	2	
Quad Input Manager Module address adjustment tool	Used to set addresses of Quad Input Manager Modules.	2	

Part	Description	Number	Picture
Wall adapter bracket kit	Enables wall mounting.	Depends on configuration	
Cosmetic trim	Used to finish off display tile edges	Depends on configuration	
Runco DHD3	Provides video processing, scaling and A/D switching.	1 per configuration	
HDMI to DVI converter	Enables DHD3 to Quad Input Manager Module connection	1 per configuration	

Optional Runco-Supplied Accessories

Make sure you have the following optional customer-supplied items as needed to complete your installation:

- Curved brackets
- WallNet
- Freestanding mount
- Outer edge/rear cosmetic trim
- Dual link DVI-D cable
- DVI-D cables to go from the source to the Quad Input Manager Module
- RS232 cables to link an external controller to the Quad Input Manager Module
- Cat 6 -STP video and data cables - Length varies per wall depending on configuration requirements and your sales order.
- Power cable (20ft-100ft) - Connects the power supply module to the LCD. Length varies per wall depending on configuration requirements and your sales order.
- IR sensor extender cable (3m) - Used to extend from the wall to the Quad Input Manager Module.

Wall Installation

Before you start building your wall, keep the following points in mind:

- A structure that is plumb and flat will greatly reduce issues with mounting and alignment of the Runco WindowWall system.
- Brackets are to be installed first - do not remove LCDs from their boxes until the entire wall of brackets is installed, level and plumb.
- For each row of brackets, build from the center outwards.
- After each row of brackets is built, check it for level and plumb.
- All brackets in a row should be level with the bracket next to it within $\pm 0.1^\circ$. Each bracket should be square with the level surface by $\pm 0.05^\circ$. Bracket wall planarity should not exceed $\pm 0.5\text{mm}$.
- For optimal product performance, maintain components within temperature specifications. Occasional temperatures out of specification are acceptable for a short period of time.

Wall Installation Options

There are three main types of Runco WindowWall installations:

- Standard installation - mounted to a wall
- Column floor stand - maximum of three high without additional support
- 2 x 2 free-standing mount

Installing the LCD Mount Structure

The TileAlign mounting system is the most important part of the wall installation. The TileAlign mounting system simplifies the task of installing and aligning the LCD tiles while allowing for efficient in-wall service. TileAlign is designed to be attached to a wall, used with optional free-standing bases or secured overhead in a flying configuration. When used in a wall-mount configuration, horizontal and vertical connection brackets ensure that each mount is precisely spaced from its neighbor in the video wall. The mount system also incorporates a service mode to accommodate front and rear in-wall repair of any LCD tile in the video wall with minimal disruption.



TileAlign mounts are designed to facilitate the thinnest profile LCD video wall. The combination of the mount plus the Runco WindowWall LCD tiles “blade” design results in video walls that measure a 4.5 inches in depth, screen to wall.

Mounting Brackets to a Wall

The basic concept of mounting brackets to a wall is to start from the center of the wall and build out the first row. It is recommended that the wall is a flat surface. If the wall is not flat, you will need to insert shims in between the LCD mounts and the wall.

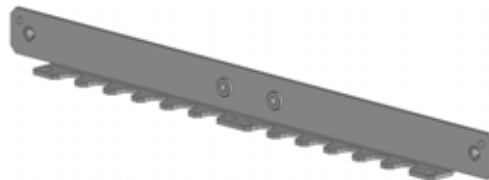
Caution: For whatever structure is used to mount the LCD wall, be sure that it is sufficiently engineered to handle the weight of the LCDs.

There are three standard brackets that will be used for wall installation. An optional stud adapter bracket can be used if you are not mounting to plywood and want to mount to studs in a wall.

LCD mount



Horizontal bracket



Vertical bracket

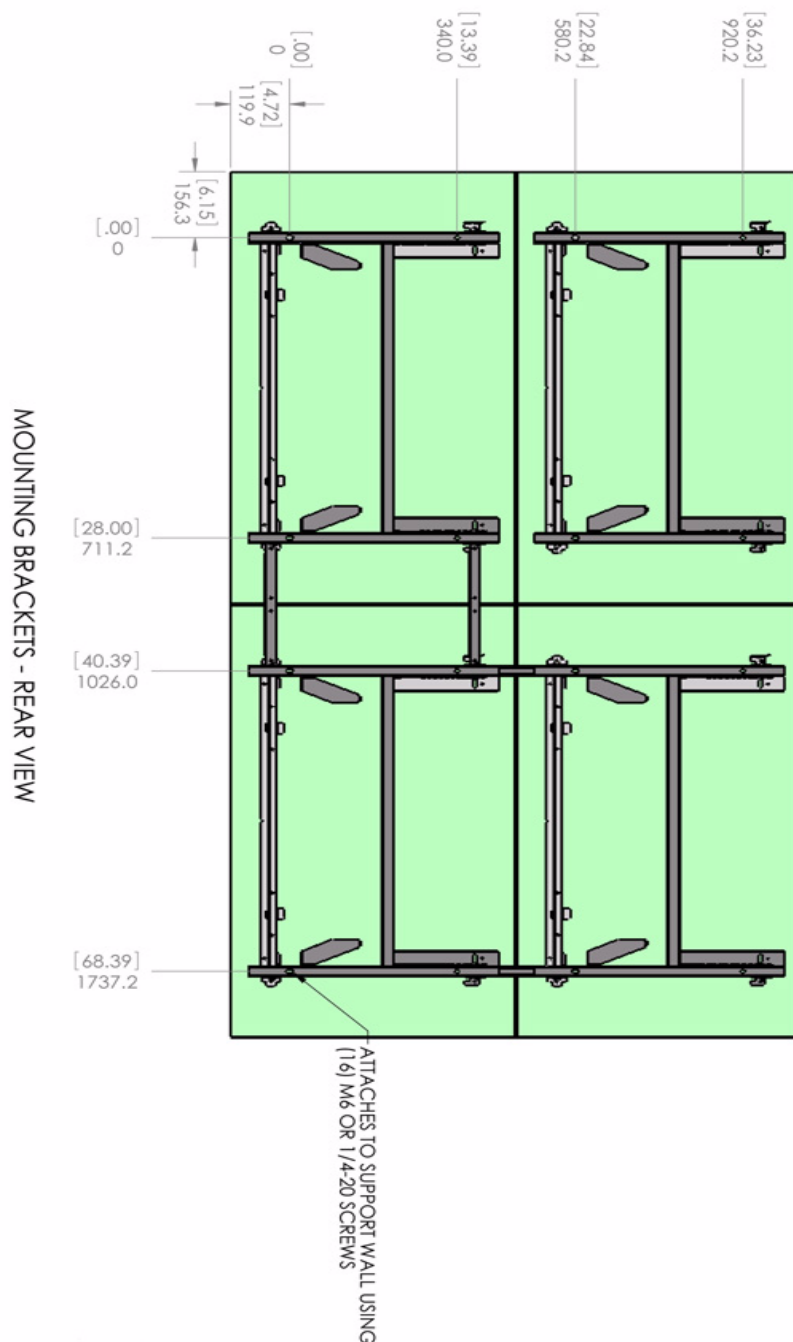


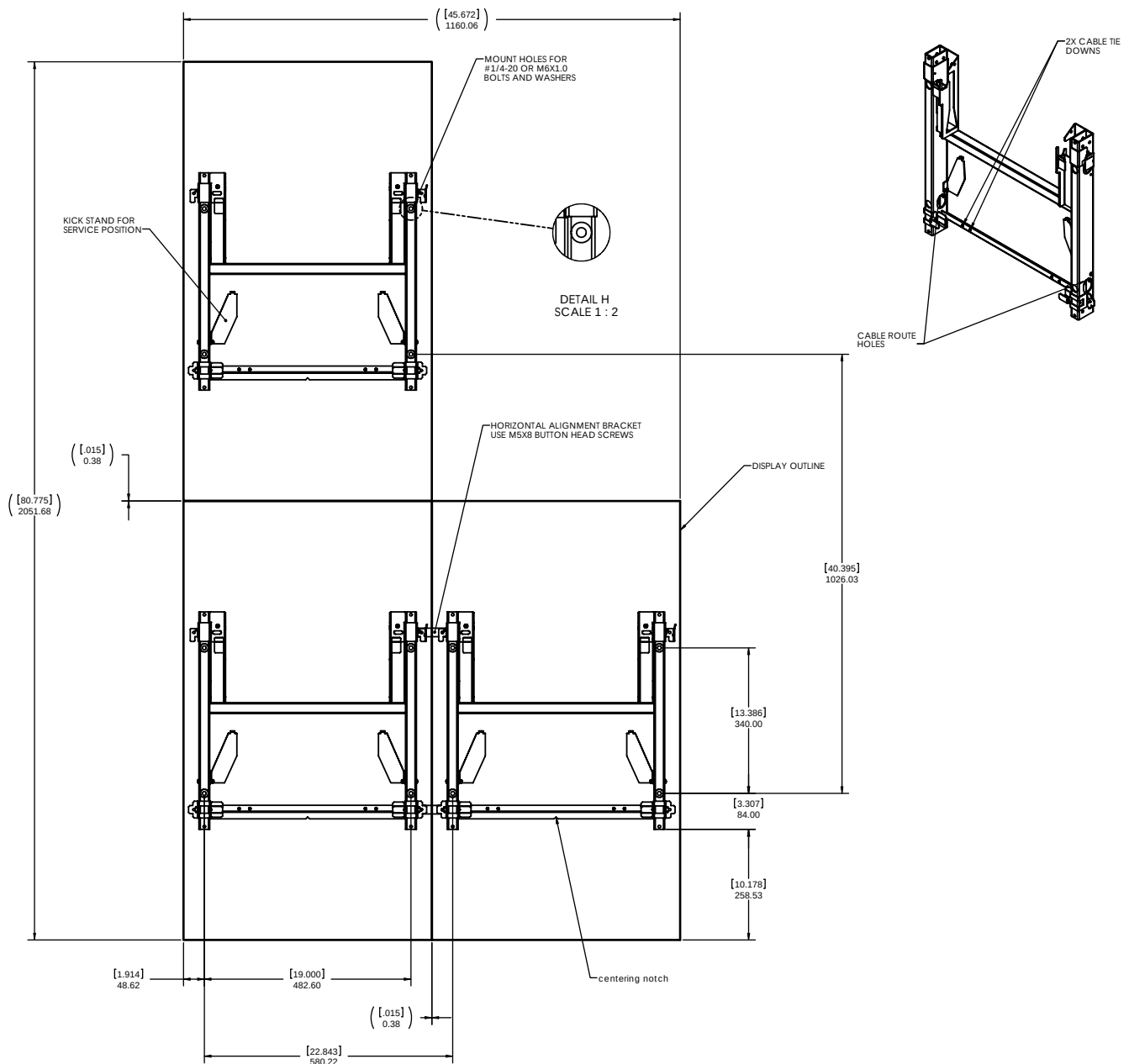
Wall stud adapter bracket (optional)



Installing Brackets on the First Row of a Fixed Wall

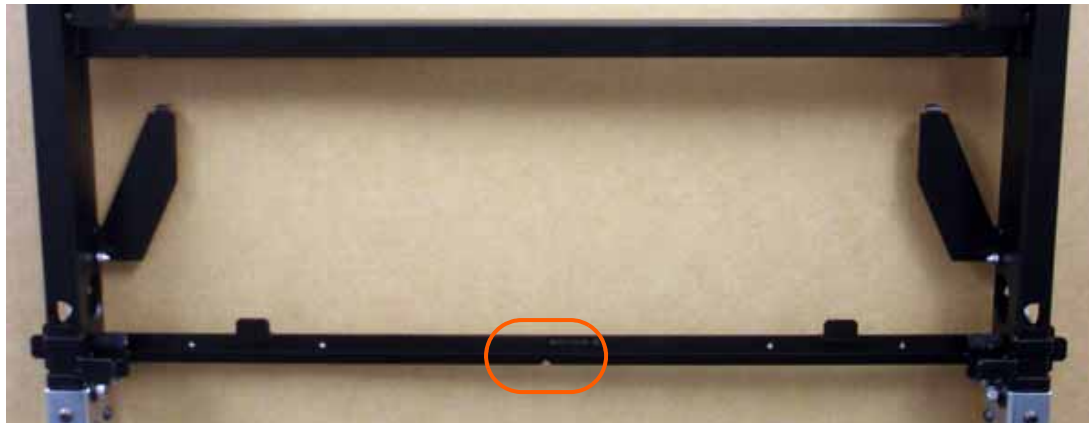
- 1 Remove the LCD mounts from the LCD tile boxes. Set aside the boxes with the LCD tiles still in them for later installation. Unpack the horizontal/vertical brackets and hardware from the wall accessory box(es).
- 2 Use the following drawing to determine the location of the center mount based on the desired LCD location. The LCD mounts are designed to mount with either four M6 or #1/4-20 hardware and a washer.





- 3** Mark on the wall vertically where the center of the display will be. Then mark horizontally where the bottom center bracket will be. Use a string to continue the line for the rest of the desired wall. This will help maintain a level row as you progress installing the LCD mounts.
- 4** To pre-determine the proper mount points for the LCD mount, measure out or use a template. Then loosely attach the LCD mount.

- 5 Using a level (a digital one is highly recommended), level the bracket as you keep in mind the string at the bottom.
- 6 Align the v-shaped notch on the LCD mount with the desired center of the LCD (this is done for the first bracket only).



- 7 Tighten the screws as necessary.

Note: Be sure that as you tighten the screws, the wall is flat. If it is not, use shims near the mount points as necessary.

- 8 Attach horizontal brackets to the LCD mount that will attach to the next LCD mount you want to install.
- 9 Repeat steps 4-8 for the first row. Be sure to level all brackets with respect to the first mounted bracket.
- 10 Using a digital level, make sure the first row is level. All brackets in a row should be level with the bracket next to it within $\pm 0.1^\circ$.

Installing Brackets on Subsequent Rows

- 1 Using two screws, mount vertical brackets to each LCD mount in the first row.



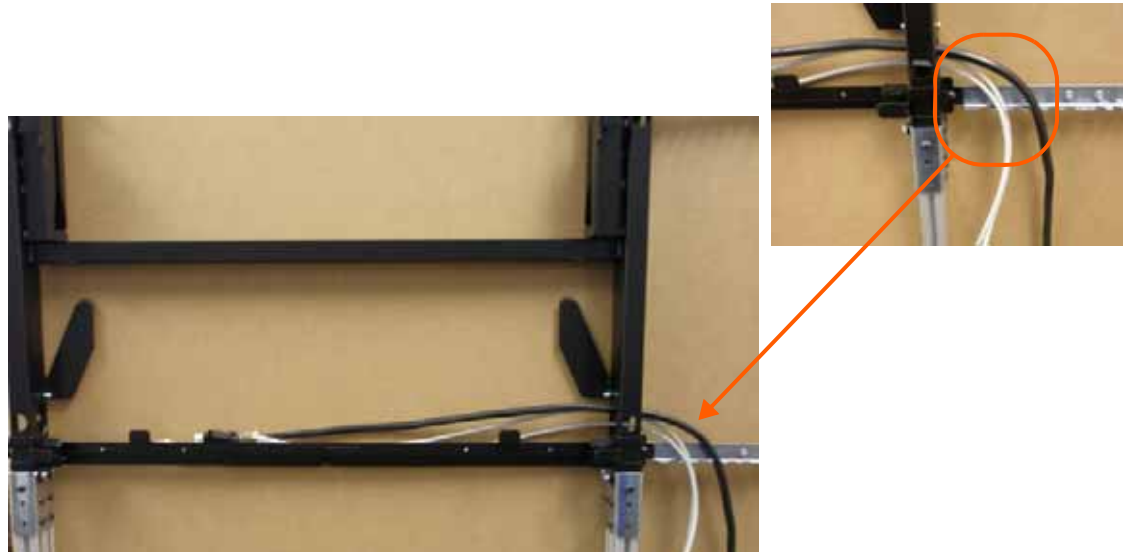
- 2 Install all the LCD mounts and attach with the two screws to the vertical brackets.
- 3 Loosely attach LCD mounts to the wall.
- 4 Install the horizontal brackets. As you add each new set of brackets, make sure the row continues to be level and plumb. Tighten the screws that attach the LCD mount to the wall. Repeat this process for all of the LCD mounts and horizontal brackets in this row.
- 5 Using a digital level, make sure the row is level and the columns are plumb.
- 6 Repeat steps 1-5 for each row that you add.

Routing Cables

Before you install LCD tiles, you need to route cables through the LCD mounts. Notches on the horizontal brackets make routing cables easier.

As you configure your wall, it is important to think about how it will be set up and where the master (A1) display should be located. This does not need to be the upper left display in an array, but rather should be in a location that will be easily accessible. For example, if you have a 4 x 4 wall and it is easier to see on-screen menus in a lower row, the master (A1) display should be set up there.

- 1 Route power, data and video cables (see "Unpacking and Checking Accessories" on page 17 for pictures) between the LCD mounts and then through the side hole near the bottom of the LCD mount. Place cables in the LCD mount channel so they are out of the way.



Note: It is highly recommended that you use the cable label maker to identify each cable before it is installed.

- 2 Route power, data and video cables from the brackets to the off-board equipment for the entire wall. For ease in troubleshooting and configuration, we recommend that you cable your wall together in "clusters." Use one power supply module, one Quad Input Manager Module and (up to) four LCD tiles in each cluster. Pick a rectangle of LCD tiles and connect them all to the same power supply module and the same Quad Input Manager Module. And then use the same power supply module to power that Quad Input Manager Module.

Note: For most configurations of the wall, you can choose any arrangement of rectangles. But for configurations that will have multiple sub walls, you will want to plan your configuration before choosing your clusters of LCDs. If you're not sure how to arrange the clusters, choose a 2 x 2 configuration. See "Understanding Wall Configuration" on page 101 for more information.

- 3 If the IR sensor will be mounted near the LCD wall, route the IR sensor cable now.

Placing Off-Board Module Equipment

Before you install your LCDs, first place your Quad Input Manager Modules and power supply modules where they will be installed.

Note: You need a 20A circuit for each power supply module.

Plugging In Cables to the Off-Board Modules

Once the modules are placed, complete the following steps.

- 1 For each Quad Input Manager Module, plug the necessary data cables into the gray COMM connector and the video cables into the orange VIDEO connector.



- 2 For each set of the Quad Input Manager Module and the power supply module, plug one end of a power cable into the 24V connector on the Quad Input Manager Module and the other end into the 24V connector on the power supply module. Do this for each set of Quad Input Manager Modules and power supply modules.



- 3 For each set of the Quad Input Manager Module and the power supply module, plug one end of the power supply monitor cable into the PS MON connector of the Quad Input Manager Module and the other end into the PS MON connector of power supply module.



- 4 For each power supply module, plug one end of the AC power cable into the power supply module and then the other end into the wall outlet.



- 5 For each power supply module that will plug into an LCD, plug in one end of the longer power cable into one of the 24V connectors on the power supply module.

Rear of Quad Input Manager Module

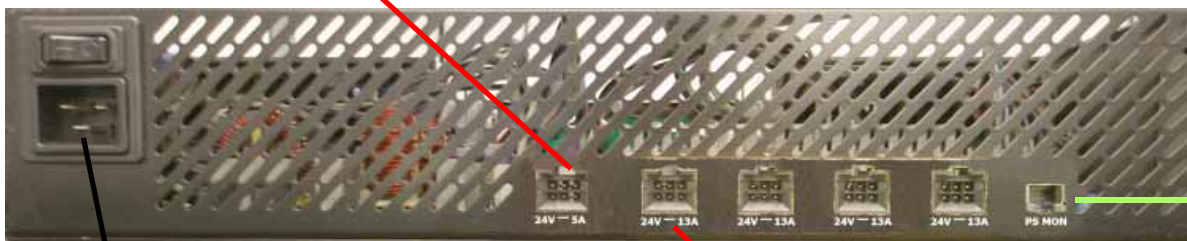


Plug one end of the power cable into this connector and other end into the power supply connector.

Data

Video

Rear of power supply module



AC power to wall outlet

Power to Quad Input Manager Module

Power to LCD

Installing LCD Tiles

The basic concept of installing LCD tiles in the wall is similar to installing brackets. Start from the center of the wall and build out the first row. As you complete each row, ensure the entire row is level.

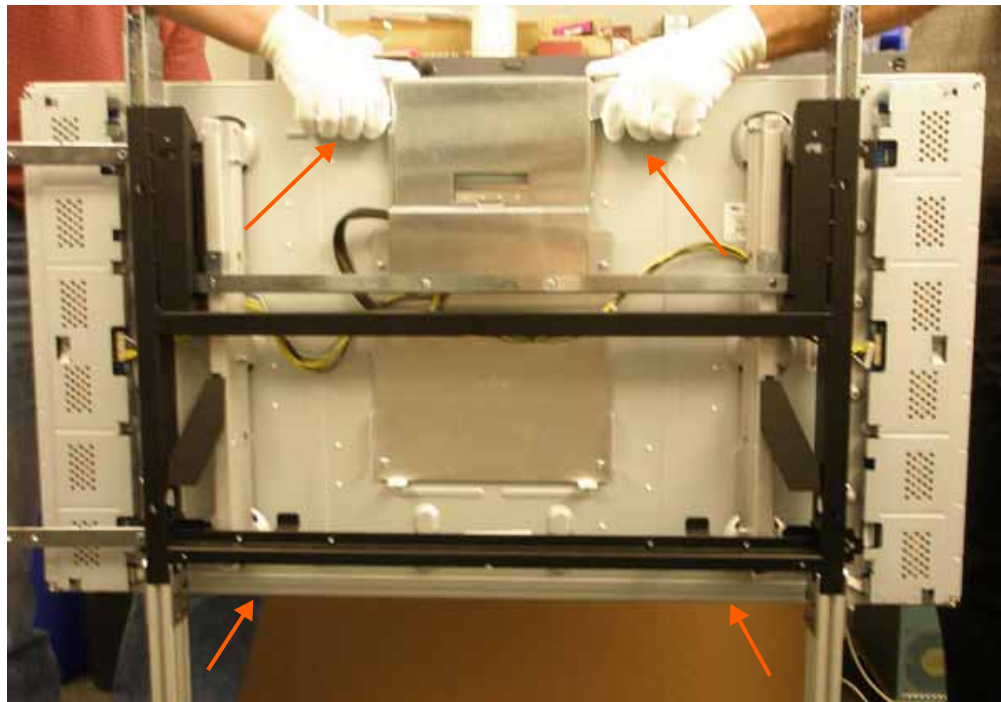
Caution: It is important that you check communication between the LCD tiles as you build each row! This will help minimize changes once your wall is fully installed.

Installing the First or Bottom Row

As you plug in and install each LCD tile, turn it on to verify it works properly and to ensure that the position sensor is active. See step **10** of this section for more information.

Note: Wearing the provided gloves will prevent smudges that would need to be cleaned later.

- 1 Remove the first LCD from the box that you want to install.
- 2 Remove the LCD from the bag and then remove the mylar sheet and tape from the LCD tile.
- 3 Using two people, lift the LCD into place. Each person should put one hand on the handle of the back of the display and one hand on the bottom of the display.



Caution: Be careful to limit contact with the thick edge of the bezel on the LCD, as it can be easily damaged. Avoid resting the LCD on the corners, as it can cause damage. If the LCD needs to be rested against a surface, it should be rested face out and resting on the LCD edge that has the thinner bezel (LCD bottom surface).



Correct position



Incorrect position

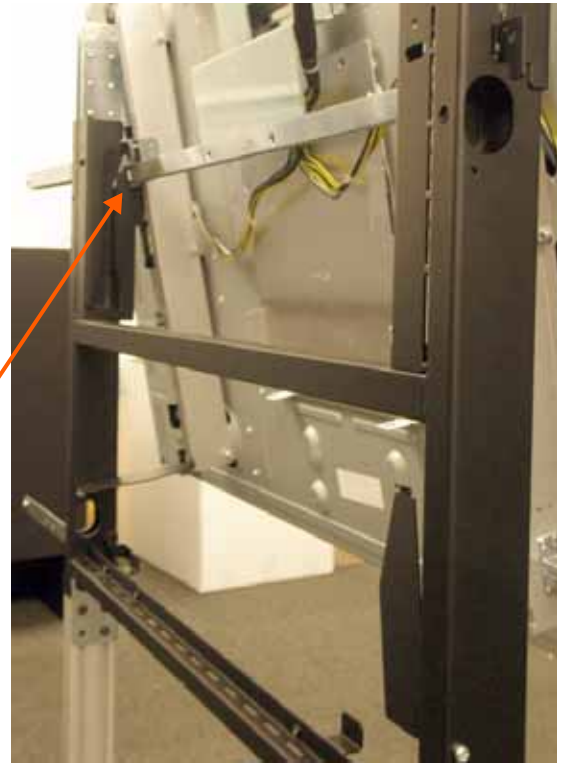


Never rest the LCD on a corner!

- 4 Slide the horizontal support bar on the back of the LCD into the notch of the LCD mount. The LCD tile is now in the pre-service mode position.



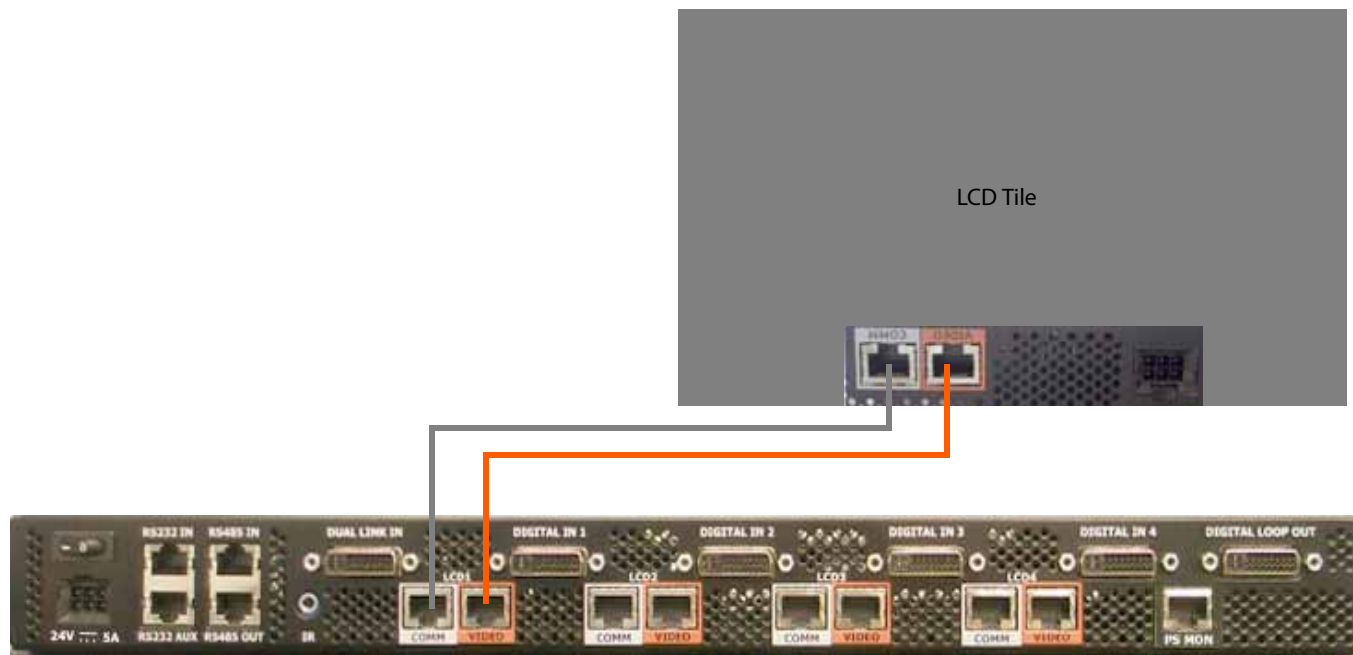
Pre-service mode



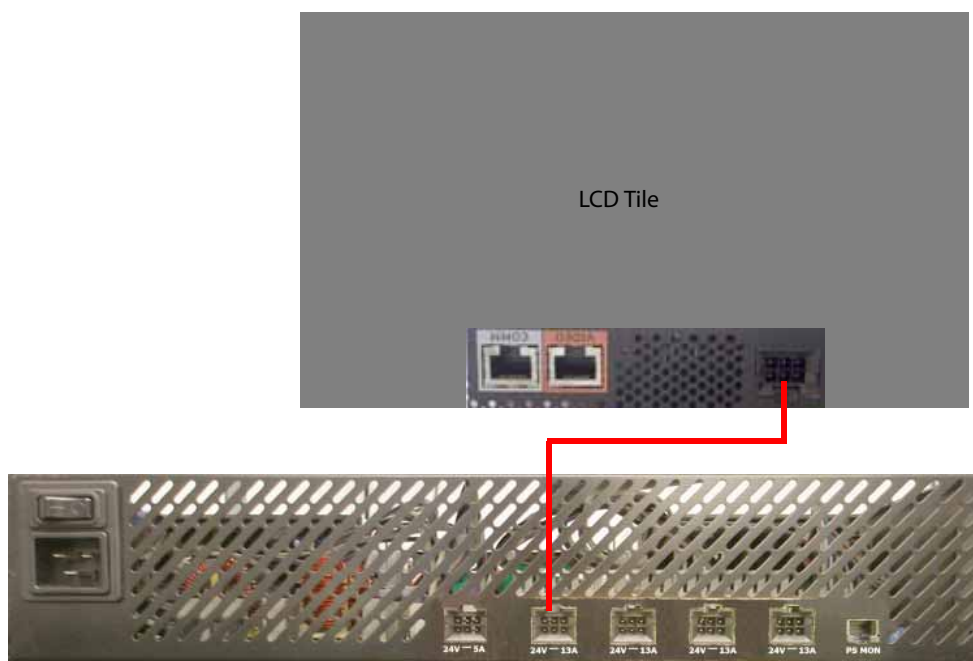
Service mode

Notch

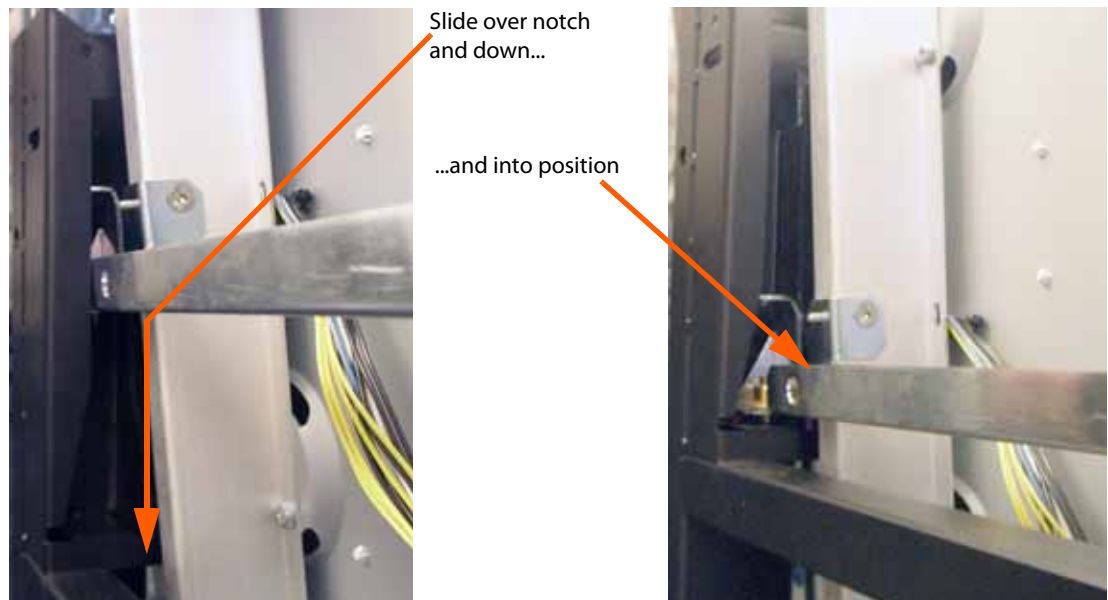
- 5 Connect the Cat 6 data and video cables from the first Quad Input Manager Module to the gray COMM and VIDEO connectors on the bottom of the LCD. Be sure to keep the cables in pairs; Do not connect the video cable from one LCD output into a different LCD tile than the data cable on that output.



- 6 Connect the power cable from the power supply module to the power connector on the bottom of the LCD.



- 7 Make sure the Quad Input Manager Module and the power supply module are turned on. Turn on the LCD tile to make sure the data and video cables are feeding information to the LCD tile. The data information is flowing correctly if you see a green light flashing next to the COM connector. The video information is flowing correctly if you see solid green light next to the VIDEO connector. If you have accidentally reversed these two cables, you will not see green lights at all.
- 8 Verify that the LCD tile is working by putting up a gray scale test pattern. If you see vertical streaks in the pattern, you will need to change the cable equalization (press MISC once on the remote) until it disappears. For more information about cable equalization, see "Cable Equalization" on page 66.
- 9 Slide the horizontal support bar on the back of the LCD up over the notch and down into position.



Note: If the display is not seated properly, make sure the x-axis and z-axis adjusters are seated in the correct positions.

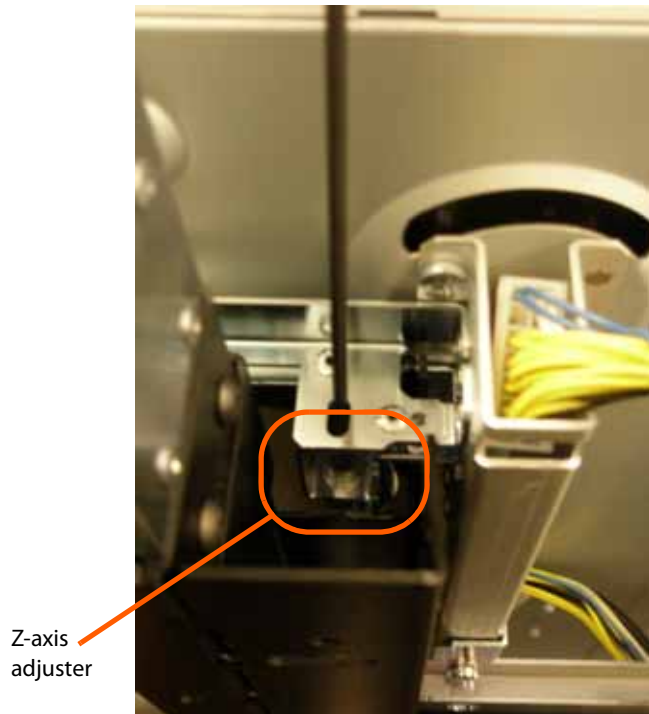
- 10 Verify that the position sensors are working by displaying the on-screen menus on the LCD. The first LCD on the left in the row should always show the display ID of 1:1. As you build the row out, the left of the two numbers on each LCD should show an incremental number. In the example below, you would expect to see 1 in the far left LCD, 2 in the next one, etc. Each number must also be unique. If you see a duplicate number or no information at all, check your cabling to make sure everything is properly connected and all of your modules are turned on.

1:1	2:1	3:1
-----	-----	-----

- 11** For displays in the same row, make sure they are in a straight line using a digital level. Use this level to ensure the displays are plumb (true vertically for both sides and the front) and aligned from display to display. While the displays will be set to a nominal position prior to shipment, you might need to make minor adjustments, which are described in the following steps.
- 12** Each LCD tile will come from the factory in the nominal position. However, due to installation and manufacture tolerances, adjustments to the module position may be required.
- 13** Starting with the center display, make sure it is level/parallel with the brackets. If it is not, use the y-axis adjusters to accomplish this. Leave the other adjusters in their nominal positions.



- 14** For the next display in the row, repeat steps **1-11** and then continue to step **15**.
- 15** When the next display in the row is installed, use the y-axis adjuster to level the display just as you did with the previous one.
- 16** If the displays are not level with each other, fine-tune the y-axis adjusters of the last installed display until it is level with the rest of the displays in the row.
- 17** Adjust the z-axis corners of the last installed display until it is flush with the display next to it.



- 18** Adjust the x-axis of the last installed display so there is a .38mm gap (approximate thickness of a business card) between the displays.



- 19** If the gap is tapered, you can make slight adjustments to the y-axis to correct it. This could be one or both displays that have the taper. Keep in mind if you adjust too far out of level, it can cause issues with the alignment of subsequent displays.

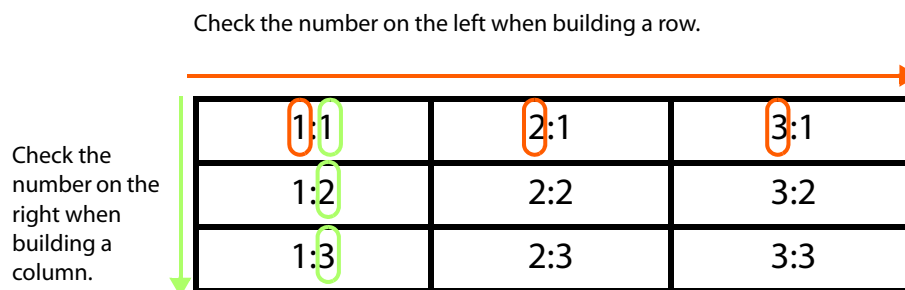
Note: A slight waviness in the gap is typical.

Installing Second and Subsequent Rows

- 1 Starting at the center display of the next row that you want to install, follow steps 1-9 of "Installing the First or Bottom Row" on page 33.

Caution: Depending on how the previous row was adjusted, when placing one display on top of another display, be sure to avoid contact between the displays. Damage may occur from the upper displays banging into or resting on the lower displays.

- 2 Verify that the position sensors are working by displaying the on-screen menus on the LCD. The first LCD on the left in the row should always show the display ID of 1:1. As you build the row out, the left of the two numbers on each LCD should show an incremental number. As you build each column, the right of the two numbers should be an incremental number. In the example below, you would expect to see 1 in the far left LCD, 2 in the next one, etc. Each number must also be unique. If you see a duplicate number or no information at all, check your cabling to make sure everything is properly connected and all of your modules are turned on.



- 3 Make sure the first display in the row is plumb with the display below it using the x-axis adjuster.
- 4 Using the y-axis adjusters, set the horizontal gap between the displays at .38mm (approximate thickness of a business card).
- 5 Adjust the z-axis corners of the last installed display until it is flush with the display next to it. Depending on the adjusted corner, this may require that the display be put in service mode. The alignment of the bottom corners might need to be re-adjusted as each new display is installed in the row.
- 6 Repeat steps 1-5 of this section to install subsequent displays in this row.
- 7 When you are finished, check the wall one more time to make sure the display IDs are in the correct order. See the example above as a reference.

Mounting the IR Sensor

Before you mount the IR sensor, keep the following points in mind:

- Because most menus will be controlled on the master (A1) display, it is suggested the you mount the IR sensor near this display.
- No matter which display a menu is on, you will still need to point the remote towards this one IR sensor that controls the entire wall.

Connecting the IR Remote

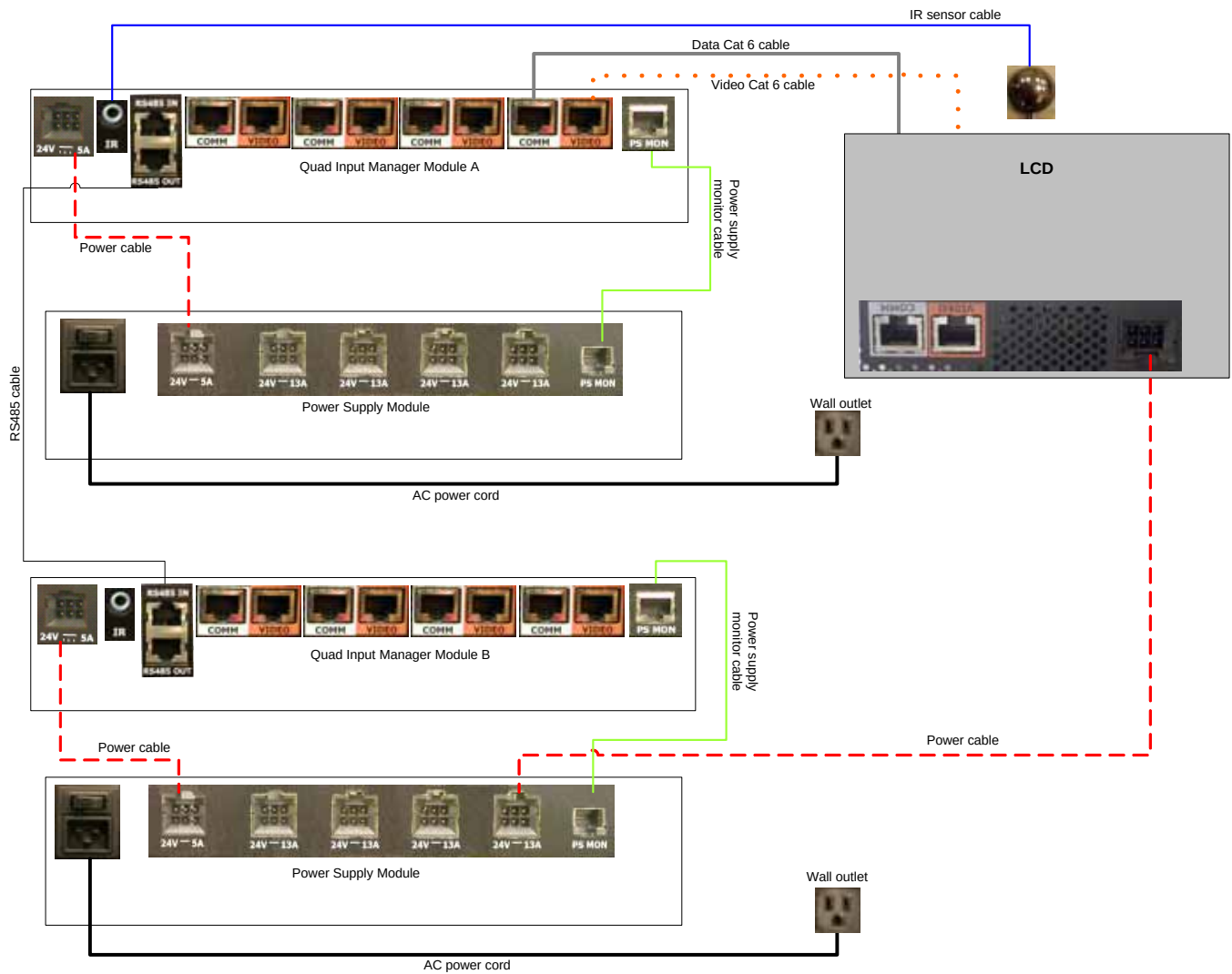
Connect the IR remote to Quad Input Manager Module A. See the diagram in "Unpacking and Checking Accessories" on page 17 for a visual example of this connector location.

RS485 Quad Module Connections

Use the RS485 cables to connect the RS485 Out of each Quad Input Manager Module to the RS485 In of the next module. The order of the modules does not matter. You do not have to complete the loop - the RS485 In of the first module will remain empty, as will the RS485 out of the last module. Unlike other Runco wall products, these connections must be made, even if you will not be controlling your wall through RS232.

Checking Your Connections

Below is a diagram of a basic configuration. This illustrates which cables are connected where. Use this to make sure you have correctly made all of the basic connections.



System Addresses

Each Quad Input Manager Module contains four microprocessor/scaler engines that each control one LCD. Each microprocessor has an address to which the master uses to communicate with. These are also the addresses that an external host computer will use when controlling the system through RS232. Unlike other Runco wall products, these addresses are determined by the system, not by the installer. Each Quad Input Manager Module has a letter address: A through P. This address is set via the address selector switch on the front of the module. You must set this selector so that each Quad Input Manager Module in your system has a unique address. Each Quad Input Manager Module has four processors, numbered 1 through 4. The address of each processor is the combination of the Quad Input Manager Module letter address and the processor number address. For example, A1, A2, A3, A4, B1, B2, B3, B4, etc. Throughout this manual we will be using these addresses to refer to these processors.

Since each processor controls one LCD, we will also be referring to LCDs by this letter/number designation. Keep in mind that if you change where the video and data cables were connected for a particular LCD, its address will change. **An LCD's address is not determined by its position in the array, rather by its Quad Input Manager Module connection.**

Each Quad Input Manager Module also has four DVI input connections. These four inputs are closely associated with the corresponding LCDs. So in this manual we will also be referring to these connections by letter and number designations, A1, A2, A3, etc. Whether an address refers to an input, a processor, or an LCD will be apparent from the context.

Quad Input Manager Module A, and specifically processor A1 has special duties. It is referred to in this manual as the master. The IR remote input, the (optional) host RS232 connection and the (optional) WallNet RS232 connections are all made on processor A. LCD A1 displays most of the menus.

Setting the Address of Each Quad Input Manager Module

For each Quad Input Manager Module that is connected to LCDs, you will need to set an address (similar to a unit ID) on the front of the Quad Input Manager Module. Using the Quad Input Manager Module address adjustment tool, manually turn the dial in the middle of the address selector to the letter you want to be identified with the LCDs connected to this Quad Input Manager Module. It is important to note that each module must be unique. So one Quad Input Manager Module needs to be A, the next B, etc.

Use a address adjustment tool to turn this dial to the letter you want



It is recommended that you set the addresses when the Quad Input Manager Modules are turned on. This make it easier to see LEDs as you switch between addresses. Once you have set the IDs how you want, it is recommended that you power cycle all Quad Input Manager Modules.

Connecting Sources

Note: If you do not want to connect your sources at this time, you may do Runco WindowWall Layout (see "Matrix Layout Menu" on page 59) and perform color balance before sources are connected.

The digital inputs of the Runco WindowWall gives you the flexibility to create a variety of configurations that can be displayed. There are three basic ways that you will most likely use your video wall.

- Spread one picture over the entire video wall
- Plug in individual inputs into each LCD in the wall
- Spread one picture over a section of the wall, or what we'll call a sub wall, and have individual inputs on the other displays.

Each Quad Input Manager Module has four DVI inputs, a Dual Link loop input and a Digital Loop Out. The Runco DHD3 connects as a source to the Quad Input Manager Module. How you connect your sources may depend on what you want to do with the wall. Familiarize yourself with the configuration scenarios ("Understanding Wall Configuration" on page 101) before connecting your sources. If in doubt, connect each source to the Digital In connector that corresponds to the LCD connector where you will want that source to be displayed. If you will use any form of Runco Big Picture, cable the digital loop out and Dual Link In connections as shown in "Loop-Through" on page 47. If you want to connect an analog source to the Runco WindowWall, you will need to use an analog to DVI-D converter or matrix switcher that converts analog signals to DVI.

Loop-Through

All of the “Quick Configure” settings and many other configurations rely on the system being configured for loop through as shown in the diagram below. Connect a DVI-D cable from the Digital Loop Out connector of the first Quad Input Manager Module, to the Dual Link Input connector of the next Quad Input Manager Module. Connect the Digital Loop Out connector of the final Quad Input Manager Module to the Dual Link In connector of the first module, completing the loop. Below is an example of a basic loop through.



Configuring a Runco WindowWall

Menu Settings

There are four different menu settings that are available when you open the on-screen menus: navigational, global, local and status. These will be described in more detail on the following pages.

Basic Configuration Steps

Configure your displays when you perform steps in the following order:

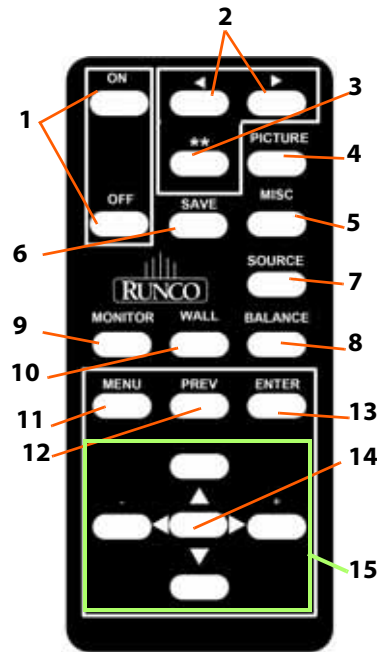
- 1 Runco WindowWall Layout (global) - see "Matrix Layout Menu" on page 59.
- 2 Color Balance the displays (local) - see "Adjusting Color Balance" on page 61.
- 3 Configure Wall Settings. See "Understanding Wall Configuration" on page 101 for more information.
- 4 If you need to adjust the image, see "On-Screen Menus" on page 119 to see different menu options.

Master vs. Slave Displays

The master display is the LCD where the bulk of the on-screen menu configuration and off-board configurations will be controlled. The master display is the one plugged into the LCD 1 connector of Quad Input Manager Module A, which is identified on screen as A1. All other displays in the array are considered "slave" displays, which will receive many global software and hardware commands from the master (A1). Information specific to individual displays can be controlled on slave displays.

Menus and the Remote

All on-screen menus are controlled using a specific remote control created for the Runco WindowWall display wall. This remote allows you to access the four menu types: navigational, global, local and status. These menus are described below.



Note: Keep in mind that you need to point the remote towards where the IR sensor is mounted.

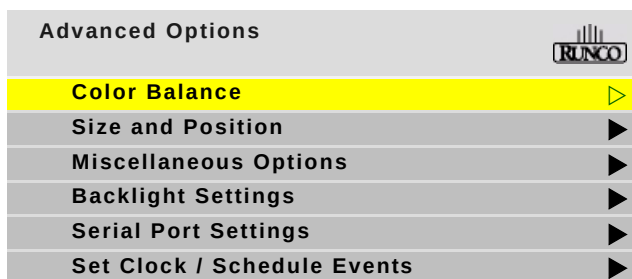
Number	Definition
1	Turn the display ON/OFF.
2	Move the target left or right.
3	Set the target to all at once.
4	With each press, go to Picture, Input Levels, Aspect Ratio, Picture Position, Zoom Top & Left, Zoom Bottom and Right.
5	Press once for Miscellaneous Options, twice for Backlight Settings, three times for Serial Port Settings.
6	Press once for Recall, twice for Save.
7	Takes you to the next Quick Configure setting (Big Picture, A1, A2, etc.)
8	Press once for the Color Balance menu.

Number	Definition
9	With each press, go to Unit Status, Serial Port Status, Setup Summary and Test Patterns.
10	Open the Wall Configuration menu.
11	Bring up the on-screen menus.
12	Return to the previous menu.
13	Press to select a menu option.
14	Move highlight to the top line of the menu.
15	Arrow keys move the highlight around on the menu to select the option you want.

Arrows on menu lines lead to other menus. Solid black arrows ► lead to Navigational menus, hollow blue arrows > lead to Status menus and hollow green arrows ▷ lead to Slave menus.

Navigational Menus

Navigational menus appear only on the master display, which can be identified on screen by A1. These menus simply allow you to get to other menus, and there are no active functions directly available from them. The MAIN MENU and ADVANCED OPTIONS are navigational menus.



Global Menus

Global menus can only be controlled on the master (A1) display. Any changes made to global menus will result in changes to the entire wall. The following menus are globally controlled:

- Wall Configuration
- Matrix Layout
- Quad Module Route
- Picture
- Memory
- Diagnostics
- Test Patterns
- Miscellaneous Options
- Backlight Settings
- Serial Port Settings
- Set Clock/Schedule Events
- Factory Settings

Status Menus

Status menus appear on all displays simultaneously and show information specific to each display. Status menus are information only and no settings can be changed. The following menus are status menus:

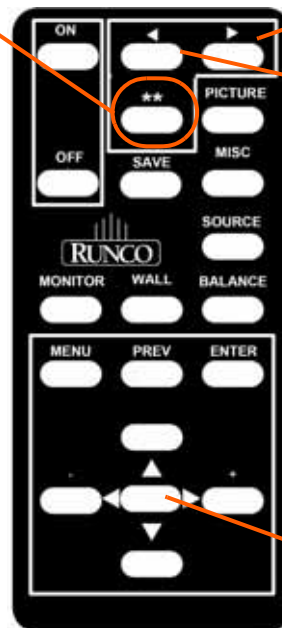
- Picture Information
- Unit Status
- Serial Port Status
- Setup Summary
- Hours
- Program Information

Local Menus

Local menus allow you to make changes to a specific display as needed. This allows you to better fine-tune certain settings, such as scaling or overscan. Local menus can appear on any display, either one at a time or on all at once. You will need to select which display you want to control by using the target control buttons on the remote control. The following menus are locally controlled:

- Wall Setup
- Input Levels
- Aspect Ratio
- Color Balance
- Size & Position
- Picture Position
- Zoom Top & Left
- Zoom Bottom & Right
- Viewport Top & Left
- Viewport Bottom & Right

This button puts the local menu onto all displays at once.



These arrows move the local menu to the next display in the array.

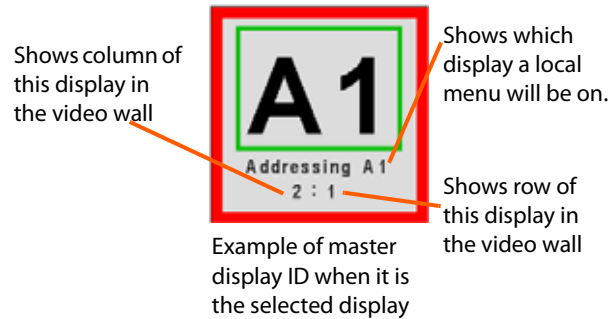
Top button

When displaying locals menus on all LCD tiles at the same time, notice the highlight bar might be on a different line on each menu. Use the TOP button to simultaneously move the highlight bar to the same place on all menus.

Display IDs

LCD displays are identified with a letter and a number, called a display ID. The letter is set on the front panel of the Quad Input Manager Module (see "Setting the Address of Each Quad Input Manager Module" on page 45). The number is chosen by the connector to which the display is connected.

If this display will show local menus, the display ID has a green square around it. The master (A1) display has a red square around it.



RS232 Communication

RS232 control is not necessary for operation, but is a convenient way to control displays from a computer at a distance. If your installation will not use RS232 control, skip this section.

Everything you can do with the remote, you can do with RS232 commands. Plus, you can send inquiries to the displays and find out the current settings and values.

RS232 connections are made with cables like Ethernet straight-through cables. This is the common type of LAN connection cable sometimes called a Cat 5 cable.

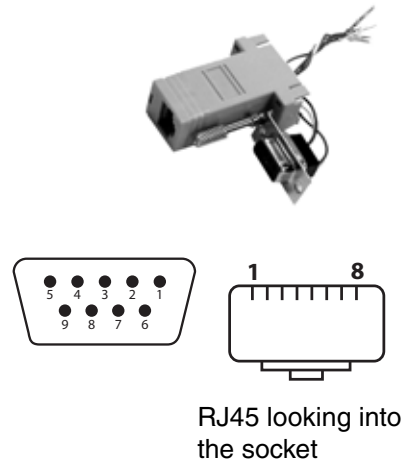
Note: It is important that the RJ-45 cable has “straight through” connections. To see if your cable is correct, hold the two connectors side by side with the ends pointing in the same direction. Look at the sides of the connectors that do not have the locking tab. If the colors of the wires inside the connectors are the same left to right for both connectors, this is the correct cable. If the colors are mirror reflections of each other, it is the wrong type.

You need an adapter to go from the computer’s 9-pin serial output connector to an RJ-45 connector. Adapters of this type are readily available at computer and electronic supply stores. The adapter is not pre-wired. You will make three connections inside the adapter, as described below.

Wiring the adapter

To go from 9-pin D-sub serial connector on the back of the computer to an RJ45 connector, use a standard RJ45-to-9-pin adapter. Wire it internally as shown. The wiring shown for this adapter is correct for *straight-through* cables. Straight-through cables are wired 1-to-1, 2-to-2, etc.

	RJ45	9-pin
Yellow wire	6	3
Black wire	3	2
Green wire	5	5



Connecting RS232 Cables

- 1 Connect the 9-pin adapter to the serial output connector of the controlling computer. (This computer does not have to be the same one as the computer used as a picture source.) The serial output is sometimes called the Comm Port, and sometimes there is more than one.
- 2 Connect a cable from the RJ-45 adapter to the In connector of the Quad Input Manager Module A.

For more information about configuring RS232 communications, see "Serial Port Settings and Diagnostics" on page 89.



RS232 port connection is on the Quad Input Manager Module. Only connect to Quad module A. Otherwise, the connection won't work.

Matrix Layout Menu

The Runco WindowWall LCDs are equipped with sensors that allow them to know their position in the array. The master (A1) keeps track of this information and displays it in the layout menu. To start the automatic discovery process, go to the MATRIX LAYOUT MENU (MAIN MENU > WALL CONFIGURATION > MATRIX LAYOUT) and select the AUTO option. The discovery process takes about 5-10 seconds for the entire wall.

Caution: You **must** complete this step before performing any other on-screen menu configurations!

Matrix Layout								
Auto			Quick			Reset		**
A1	A2	A3						
B1	B2	B3						
C1	C2	C3						

Note: The first time you open this menu, it will be populated from A1 all the way through P4, no matter how many modules you have.

Depending on how your wall is set up, one of four scenarios could occur:

- Auto Layout Complete - The discovery process completed without errors.
- No Auto Layout has been performed. See "Troubleshooting" on page 133.
- Error in the Layout - This might appear if an LCD is in service mode. See "Troubleshooting" on page 133.
- If your array is larger than nine wide or nine high, you will not be able to see the entire layout on this menu. A message will appear that indicates this.

Adjusting Color Balance

Color Balance is used to select the color temperature of each display, as well as to match the colors of adjacent displays when several displays are arranged in an array. When you see a yellow car move across a video array from one display to another, you want it to have the same color for the whole trip, not change from yellow to tan to orange.

Colors vary slightly from one display to the next, because of slight variations in the backlights and displays. This cannot be avoided, but you can compensate for it with color balancing.

Understanding Color Temperature

Different “pure white” light sources do not always have the same color. For instance, light from an incandescent bulb has more yellow than light from direct sunlight. “Color Temperature” is a way of measuring these color differences. In general, higher color temperature numbers are bluer or “cooler.” You may have a reason for wanting your display to be a specific color temperature. For instance, if you are using the Runco WindowWall in a television studio where you will be videotaping the content, you will want a low color temperature. The Runco WindowWall defaults to the brightest setting possible, which is 100 in the RED, GREEN and BLUE lines under WHITE BALANCE. You may choose a different color temperature by setting it in the COLOR BALANCE menu.

Adjusting Color Temperature

Select the COLOR TEMPERATURE line in the COLOR BALANCE menu and then select from 3200°K (Warm), 5500°K, 6500°K, 8500°K (Cool) or NATIVE. If you want the brightest display, select the NATIVE option.

Changing the color temperature changes the three WHITE BALANCE values. You can also change the WHITE BALANCE values individually to create a custom color temperature. Once you have changed the values, a new CUSTOM option is available on the COLOR TEMPERATURE line.

Color Balancing Multiple Displays

Color balancing is subjective. It may seem strange at first, but it gets easier with practice. Fortunately, you don't have to match all the colors; you only have to match whites and grays. It is not necessary to achieve a perfect white or a perfectly colorless gray. It is only necessary that all the displays look alike when they display white and gray.

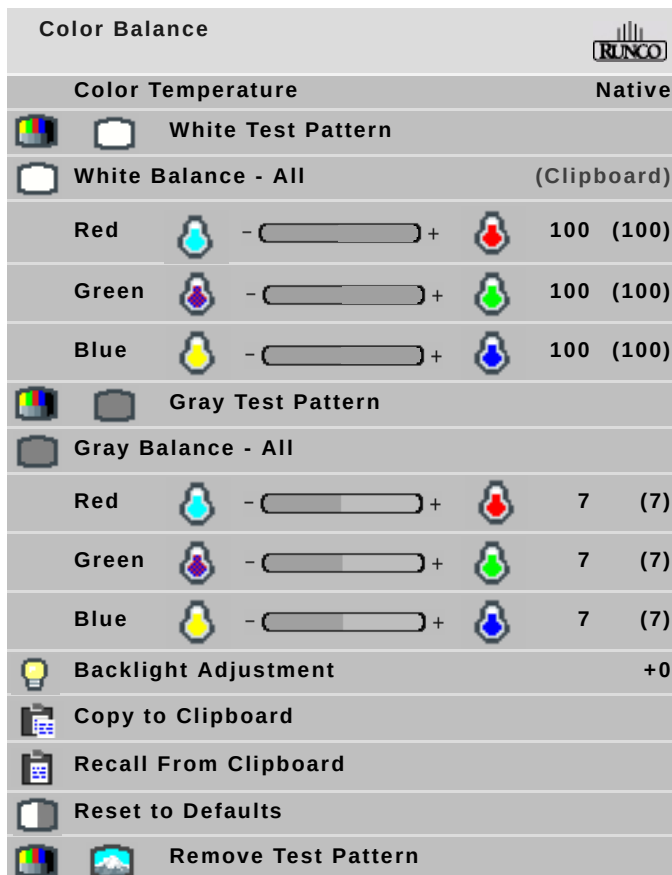
Caution: Never try to match the colors of the displays with the black and white level controls or with the video controls. You will not like the results if you do.

Caution: If you are color blind, even a little bit, do not color balance your array. Have someone else color balance the wall.

- 1 Turn on all the displays in the array and let them warm up for at least five minutes. The backlights must be thoroughly warm before you color balance.
- 2 Press MISC twice on the remote to open the BACKLIGHT CONTROL menu. Confirm that the BACKLIGHT INTENSITY is greater than 1.



- 3 Open the COLOR BALANCE menu by pressing BALANCE on the remote.



Note: The color balance menu is a local menu. For more information about navigating local menus, see "Local Menus" on page 54.

- 4 Press the ** button to show the menu on all displays.

- 5 If the array has never been color balanced, make sure you start with the same color temperature setting on each display. If you are not interested in achieving a specific color temperature, use NATIVE, which is the brightest. If the display has been color balanced before, it will display CUSTOM in the COLOR TEMPERATURE line, because the balance values don't match any of the pre-set color temperatures.
- 6 Highlight the WHITE TEST PATTERN line and press ENTER. This will show the white test pattern on all displays.

Note: Always use the internal Test Patterns for color balancing, not an external pattern.

- 7 When all displays are white, find the *least bright* display in the array. This will be the "baseline" display, and you will *not* adjust it. All other displays will be adjusted to this baseline display.
Why pick the "least bright" display? Why not pick the brightest and adjust to it? When the white value is 100, the display is as bright as it can get. You are adjusting for slight variations in backlight brightness.
- 8 Choose a display next to the baseline display and adjust its BACKLIGHT ADJUSTMENT to make its overall brightness match the baseline display. (If you can't bring this setting down to match the baseline, maybe you didn't choose the darkest display.)
- 9 Continue with other adjacent displays until the overall backlight brightness matches on all displays.

Note: The backlight adjustment does not affect the color of the display.

- 10 Choose a display next to the baseline display and adjust its white values (red, green and blue) to make its color match the baseline display. Concentrate on the center of the displays, not the adjacent edges. Do *not* adjust the gray values at this time.
- 11 Continue with other adjacent displays until all the displays have the same appearance when white.
- 12 When all displays look the same when displaying the White test pattern, highlight the GRAY TEST PATTERN line and press ENTER. This will show the gray pattern on all displays.
- 13 Choose any display as the new baseline display. It does not need to be the baseline display you used for white.
- 14 Adjust the gray values for all the displays until they match the baseline display. Do one display at a time. Again, match the center part of the picture, not the edges.

- 15 When all displays match in gray, highlight the REMOVE TEST PATTERN line and press ENTER. Press MENU to close all the menus.

Tips for Color Balancing

- COPY TO CLIPBOARD will save all the current settings to a temporary memory. You can then make more adjustments to see if it gets better or worse. RECALL FROM CLIPBOARD will restore these saved settings. The clipboard is only for testing. These values are not saved when AC power is off.
- Color balance values are saved for all input sources in the same memory location.
- Stand back from the array and directly in front of it to get an overall view.
- Small changes are difficult to see at first, particularly with white. When you don't know which color to change, pick one at random and change it 4 or 5 steps. The result will be either better or worse. If worse, go the other way with that color. If that is also worse, put this color back where you started and do the same with another color. If everything you do makes the match worse, you must be close to the ideal point.
- Removing red has the same effect on hue as increasing blue and green together. The COLOR BALANCE menu slider bars have colored bulbs at each end to tell you what the effect will be of moving a color toward that end.
- Changes in the white values affect the gray values but changes in gray values do not affect the white values.

Advanced Options

Advanced options are used mostly for fine tuning and will rarely need to be used. The most commonly used items in the ADVANCED OPTIONS MENU are described in the following sections:

- Color Balance: see "Adjusting Color Balance" on page 61
- Backlight Settings: see "Backlight Control" on page 77
- Miscellaneous Options: see "Miscellaneous Options" on page 66

The less commonly used options are covered in the following sections of this manual:

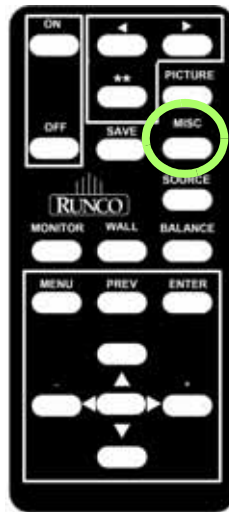
- Size and Position: see "Adjusting Position" on page 79
- Serial Port Settings: see "Serial Port Settings and Diagnostics" on page 89
- Set Clock/Schedule Events: see "Setting the Clock/Scheduling an Event" on page 67

Main Menu		
Wall Configuration	▶	
Picture	▶	
Memory	▶	
Diagnostics	▶	
Advanced Options	▶	
Program Information	>	

Advanced Options		
Color Balance	▶	
Size and Position	▶	
Miscellaneous Options	▶	
Backlight Settings	▶	
Serial Port Settings	▶	
Set Clock / Schedule Events	▶	

Miscellaneous Options

The MISCELLANEOUS menu contains several unrelated settings. To access the MISCELLANEOUS menu, press MISC once on the remote.



Miscellaneous		
Cable Equalization		
 Menu Timeout	Never Time Out	
Rotate Menu		None
☒ (EDID) Plug and Play		
☒ Allow Frame Lock		

Cable Equalization

This feature adjusts the long line video system to compensate for cable type and length. The default cable equalization is a mid range value that should allow an image to be seen no matter what the cable configuration actually is. The CABLE EQUALIZATION

“slave” menu is the first menu to come up when you press the MISC button. Press the ** button to be sure it is on all displays and then use up and down until you get an image on the master. If you can’t see images on the other displays use the target < and > buttons to move the CABLE EQUALIZATION menus to those displays to adjust individually. It may be easier to complete the MATRIX LAYOUT menu on the master before attempting to adjust CABLE EQUALIZATION on the slaves.

Miscellaneous		
Cable Equalization		1
*		
***	Copy Settings to All Displays	

Note: It is possible to have this value so off that no video can be seen.

Menu Timeout

Determines how long the on-screen menus will be displayed; the range is 0-60 seconds; NEVER TIME OUT means the menus will remain on screen until you choose to turn them off.

Rotate Menu

Makes the menus readable when the display is arranged in portrait or landscape orientation. ROTATE MENU does not rotate the picture. It only arranges the menus so they read the same way the picture does. To use the display in portrait mode, your source image must be rotated.

(EDID) Plug and Play

Plug and Play allows the source computer's video card to query the display and send the correct resolution. Most video cards work with Runco displays. For the few that don't, you may need to turn off Plug and Play and manually specify the video card settings based on the display's capabilities.

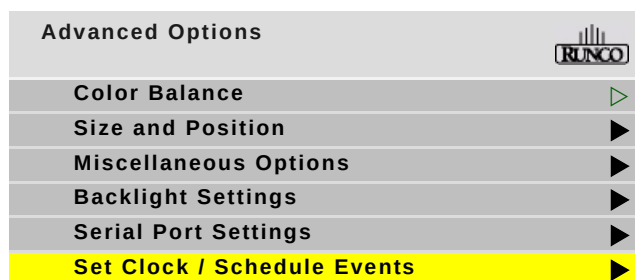
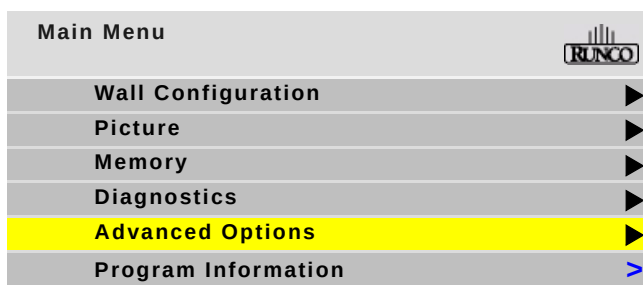
Allow Frame Lock

Frame lock causes the display to synchronize its vertical refresh timing with that of the incoming source. This prevents frame tearing or frame dropping. To frame lock, the incoming signal must be within the refresh parameters of the display itself, which is from 49 Hz to 62 Hz.

Setting the Clock/Scheduling an Event

The Runco WindowWall can be easily programmed to schedule specific events, such as turning the unit on or off.

- 1 To access the SET CLOCK/SCHEDULE EVENTS menu, press MENU on the remote and from the MAIN MENU, select ADVANCED OPTIONS > SET CLOCK/SCHEDULE EVENTS.





Press <ENTER> to set clock and schedule events

Current	Date/Time:	Tue	Feb	28	2007	10:40
01	07:30	Daily				Turn On
02	21:30	Daily				Turn Off
03	12:30	Mondays				Recall #04
04	16:00	Wednesdays				Recall #23
05	02:00	Apr 1		2007		Clk +1 Hr
06	02:00	Oct 28		2007		Clk -1 Hr
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

- 2 Press ENTER to open the EVENT popup menu.
- 3 Do one of the following:
 - To set the clock, see "Setting the Clock" on page 69.
 - To schedule an event, see "Scheduling an Event" on page 70.

Setting the Clock

Use the following instructions to set the clock.

- 1 If 0 is not already selected in the Event # line, use the -/+ keys to select it.

Event # (0= set clock)	0
Frequency	Never
Action	No Action
Slot to Recall	1
Day of Week	Tuesday
Year	2007
Month	03
Date in Month	05
Hour	21
Minute	30

- 2 Depending on the changes you want to make, update any of the following lines:
 - Year
 - Month
 - Date in Month
 - Hour
 - Minute

Note: Time is calculated using a 24-hour clock. For example, if the current time is 9:30 p.m., set the Hour line to 21 and the Minute line to 30.

- 3 When you are finished making the appropriate changes, press ENTER to see the new time at the top of the SET CLOCK / SCHEDULE EVENTS menu.
- 4 Press MENU to close the menu system.

Scheduling an Event

The most important event that can be “scheduled” for the Runco WindowWall is to turn it on or off. Scheduling an automatic shut off time for the Runco WindowWall helps ensure that Temporary Image Retention does not occur. The following events can be scheduled:

- Turn unit off/on
- Set the clock ahead/back 1 hour
- Recall a memory slot

Use the following instructions to schedule an event.

- 1 Use the -/+ keys to select the “event number” you want to correspond to this event.
- 2 Use the up/down arrows to select the Frequency line. Use the -/+ keys to scroll through the list until you find the selection you want. The following frequencies can be selected:
 - One Time (e.g. to set clock ahead one hour in the spring)
 - Daily (e.g. to turn the unit on/off)
 - Weekly

Event # (0= set clock)	1
Frequency	Daily
Action	No Action
Slot to Recall	1
Day of Week	Wednesday
Year	2007
Month	02
Date in Month	28
Hour	0
Minute	0

Note: If you have set up a one time event, the frequency will show “Never” once the event has occurred. You can schedule the event to occur again by changing the frequency back to “One Time” and then correcting the date and time.

- 3 Use the up/down arrows to select the Action line. Use the -/+ keys to scroll through the list of Action items until you find the one you want. The following actions can be selected:
 - Turn Unit Off
 - Turn Unit On
 - Recall Slot
 - Set Clock Ahead 1 Hour
 - Set Clock Back 1 Hour
- 4 Do one of the following:
 - If you selected "Recall Slot" in the previous step and want to recall a memory slot other than the one shown, go to 5.
 - If you did **not** select "Recall Slot" in the previous step, go to 6.
- 5 Use the up/down arrows to select the Slot to Recall line. Use the -/+ keys to scroll through the list until you find the selection you want.

Event # (0= set clock)	3
Frequency	Weekly
Action	Recall Slot
Slot to Recall	4
Day of Week	Monday
Year	2007
Month	05
Date in Month	28
Hour	12
Minute	30

Note: If you select a memory slot that has not been set up, no action will occur.

- 6 Depending on the frequency you selected and the change you want to make, update any of the following lines:
 - Day of Week
 - Year
 - Month
 - Date in Month
 - Hour
 - Minute

Note: Time is calculated using a 24-hour clock. For example, if you want your unit to turn off at 9:30 p.m., set the Hour line to 21 and the Minute line to 30.

- 7 Continue setting up events until you are finished. Changes are automatically saved each time you move from line to line.
- 8 When you are finished making the appropriate changes, press ENTER to see the new events on the SET CLOCK / SCHEDULE EVENTS menu.
- 9 Press MENU to close the menu system.

Aspect Ratio Settings

The aspect ratio of any picture is its width divided by its height. $W/H = \text{Aspect Ratio}$

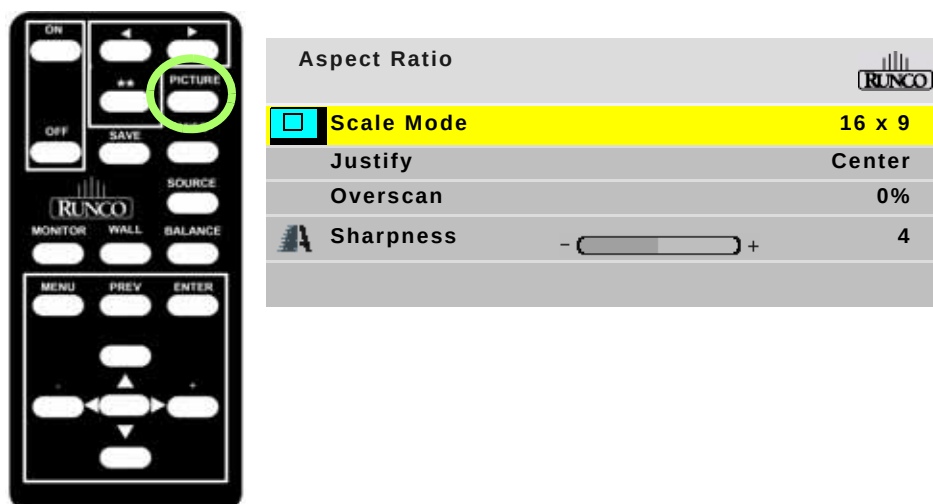
The native aspect ratio of the Runco WindowWall is 1.77. This is sometimes referred to as 16:9 for 1.77. The native resolution of the Runco WindowWall is 1366 x 768.

Many pictures do not have this aspect ratio. Standard television, VGA, SVGA, and XGA signals are 1.33. Movies from DVDs vary depending on the original film format, but are often 1.85. The larger the number, the “wider” the picture seems.

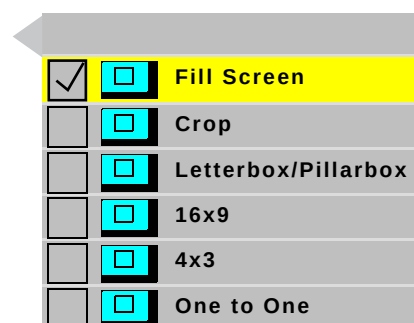
When the incoming picture is a different aspect ratio from the screen, the display gives you six choices (see SCALE MODE submenu options) to make it fit.

Scale Mode Settings

- 1 To select the Scale Mode, press PICTURE on the remote three times.



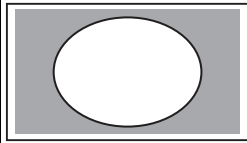
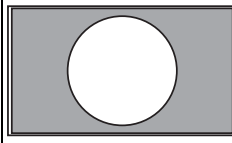
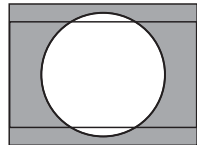
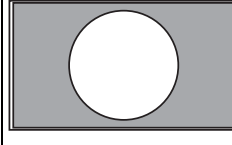
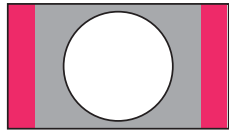
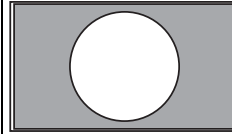
- 2 With SCALE MODE highlighted, press ENTER. The SCALE MODE submenu displays.

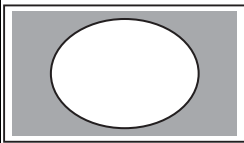
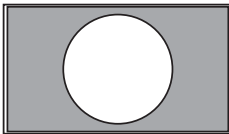
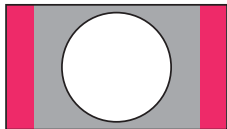
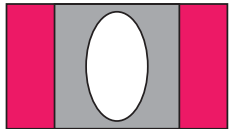
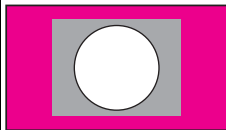
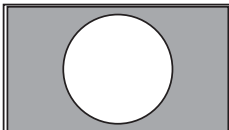


The scale modes are “radio” buttons; you can only choose one at a time.

Note: The display is not capable of compressing the image in one direction while stretching it in the other. For example, if you try to display a UXGA (1600 x 1200) on an Runco WindowWall in a 1 x 2 column arrangement (1366 x 768) at Fill All, the display will letterbox the image and the following note will appear at the bottom of the menu: "Can't display Change Scale Mode." You can leave the scale mode at Fill All or change it to Letterbox. You can also select Crop or One to One.

Note: The SCALE MODE menu icons change to indicate the effect each mode will have on the picture based on the JUSTIFY and SCALE MODE settings, and the source resolution.

Scale Mode	Affect on Input Type on 16 x 9 Display	
	4 x 3 source (e.g. Standard Video or VGA/SVGA/XGA)	16 x 9 source (e.g. 1080i or WXGA computer source)
Fill Screen	Stretches width of image 	Displays full image without distortion 
Fill Screen makes the picture fit top-to-bottom and left-to-right, regardless of how this stretches or compresses the picture. Fill All distorts the picture, when the aspect ratio of the incoming picture is not the same as the display.		
Crop	Crops top and bottom of image; fits width of image without distortion 	Displays full image without distortion 
Crop expands non-native aspect ratio pictures until the <i>second</i> edges touch the border and lets the other edges of the picture fall outside the display and get cropped.		
Letterbox /Pillarbox	Fits height of image without distortion; fills width with border 	Displays full image without distortion 
Letterbox/Pillarbox expands the picture until the first edges (top-bottom or left-right) touch the border of the display, and then fills in the other sides with a solid color.		

Scale Mode	Affect on Input Type on 16 x 9 Display	
	4 x 3 source (e.g. Standard Video or VGA/SVGA/XGA)	16 x 9 source (e.g. 1080i or WXGA computer source)
16 x 9	Stretches image to fill width without affecting height 	Displays full image without distortion 
(16 x 9) forces the aspect ratio to 16 x 9 (1.77), the standard for many DVD movies. This will distort any picture other than 16 x 9 aspect ratio pictures. 16 x 9 can be used to display anamorphic DVDs on an array.		
4 x 3	Fits height and width of image without distortion; fills width with border 	Fits height of image, compresses width and fills with border 
(4 x 3) forces a 4 x 3 (1.33) aspect ratio, the ratio of standard television.		
One to One	Displays image without distortion at actual size 	Displays full image without distortion 
One to One maintains the original size and aspect ratio of the picture. This may leave blank areas on all four sides. For instance, a VGA picture (640 x 480) on a 16 x 9 display will occupy only a small area in the center of the screen. The primary use of One to One is to display the image without scaling artifacts. The One to One Scale Mode will produce different cropping results and the image size will be different for each input resolution.		
Example above represents a VGA input displayed on one LCD tile		Example above is for 1366 x 768 input displayed on one LCD tile

Justify Settings

Justify determines how the picture will be placed in a wall of displays. For a single display, Justify determines placement on the screen. For a wall of displays, if the image is not large enough to fill all the displays in the wall, some will be left blank.

Top/Left

Positions the image starting with the top, leftmost display, then across and down.

Center

Positions the image starting with the center of the image in the center of the wall spreading out equally to all displays.

Bottom/Right

Positions the image starting with the bottom, rightmost display, then across and up.

Overscan

This is used to hide blank areas and stray lines in the edges of an image. The lower the overscan setting, the more of the optical image that is seen. Standard CRT televisions have an overscan of about 5%, which may actually hide content or images that you want to see.

Sharpness

Sharpness settings determine how crisp the image should be. There are sixteen levels of sharpness, where 0 is the softest and 15 is the sharpest. Seven is the default.

Backlight Control

The backlight is optimized for the LCD operation. For normal operating conditions, the backlight can be adjusted for maximum brightness if desired. If you are operating at higher altitudes up to 2000 meters, it is recommended that you run the backlight at a reduced intensity. Running at maximum intensity at high altitudes can affect the lifetime expectancy.

Note: To extend the backlight life, it is recommended that you use the lowest backlight brightness that makes sense for your application. This will reduce power consumption, heat output and the chances of TIR from occurring. (See "Recommended Usage" on page 5)

To open the BACKLIGHT CONTROL menu, press twice on the remote.



Note: The last two lines will only appear on the master (A1) display.

Auto Backlight On

If AUTO BACKLIGHT ON is checked, the display turns on the backlights soon after AC power is applied. It won't wait for a remote control or RS232 command.

This is the normal mode for applications where the displays will be on 24 hours a day. This way, no one has to manually turn on the backlights after a power failure.

Caution: To prevent temporary image retention (TIR), it is recommended that you do **not** leave the Runco WindowWall on for 24 hours a day. To get the most out of your display, see "Recommended Usage" on page 4.

If the displays normally have the backlights off for part of the day or night, do not check this box. Otherwise a power failure at night would turn on the backlights.

Turn Backlight Off With No Source and DPMS Delay

When checked, TURN BACKLIGHT OFF WITH NO SOURCE (DPMS) causes the backlights to turn off after the source goes absent for the length of time specified in the DPMS DELAY line. If this line is not checked, the backlights remain on indefinitely. To specify an amount of time after which the source is absent that the backlights will shut off, enter that number in the DPMS DELAY line.

Backlight Intensity

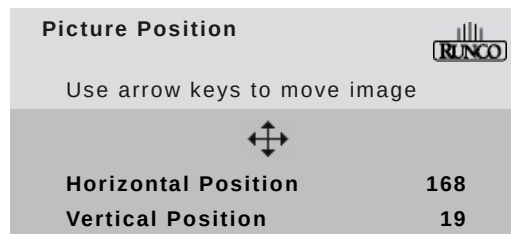
The backlight intensity can range from 1-10. Confirm that the BACKLIGHT INTENSITY is greater than 1. If you are operating at higher altitudes up to 2000 meters, it is recommended that you run the backlight at a reduced intensity.

Adjusting Position

Position moves the picture on the screen but does not move the menus.

Picture Position

Open the PICTURE POSITION menu (MAIN MENU > ADVANCED OPTIONS > SIZE AND POSITION > PICTURE POSITION). The four arrow keys move the picture on the screen.



The numbers for HORIZONTAL POSITION and VERTICAL POSITION refer to the number of pixels from sync to the first displayed pixel. These numbers get smaller as the picture moves up and to the left.

Horizontal Position

Shows the number of pixels from the beginning of H sync to the first active pixel. Because there are many black pixels after H sync, this number will not be zero when the picture is at the left border of the screen.

Vertical Position

Shows the number of lines from V sync to the first active line, so it will not be zero when the picture is at the top of the screen.

Note: Adjusting the VERTICAL POSITION too far may cause the image to jump or hop. If the image appears to flicker or hop, readjust the VERTICAL POSITION.

Spreading Images Across the Wall

For the Runco WindowWall, you will need to set up a variety of options that relate to how each display fits into the wall. Whether you use Runco's Big Picture™ or an external video processor, your goal is to make the picture fit together properly at the edges.

Using an External Video Processor

The processor divides a single picture into several sections and sends each part on a separate cable. Connect these cables to the proper display.

You can still position the picture with the display controls. With most processors, you can position and zoom the picture with the processor controls.

Using the Quick Configure Feature

The Runco WindowWall contains sensors that easily configure the layout of your wall. Quick Configure sets up the routing (see "Understanding Wall Configuration" on page 101) and the Big Picture Setup (see below) automatically. If you have a more complicated setup and want to manually configure your wall, use the BIG PICTURE SETUP menu.

Using the Matrix Layout Menu

This feature is described earlier in the manual. For more information, see "Matrix Layout Menu" on page 59.

Using Runco's Big Picture™

To use Runco's Big Picture™, you must set the values in the BIG PICTURE SETUP menu for the same wall size on all the LCDs in the wall using the Big Picture feature.

Wall Configuration		
Quick Configure Big Picture	Big Picture A3	▶
Big Picture Setup		▶
Matrix Layout		▶
Quad Module A Route		▶
☒	Enable High Resolution and Dual Link Inputs	
Synchronize High Resolutions		

Big Picture Setup			
Matrix Position	3x3	1:1	
Wall Width		3	
Wall Height		3	
Unit Column		1	
Unit Row		1	
☐	Wall Mode		
☐	Frame Compensation		
	Frame Height	10 pixels	
	Frame Width	10 pixels	
* *** Copy Settings to All Displays			

Wall Width and Wall Height

These show the number of displays wide and high for the *picture*. This may be different from the physical size of the wall. You could build a 4 x 3 array of displays and use WALL MODE to put a single picture on the four displays in the upper left corner, for instance. Using the QUICK CONFIGURE line on the WALL CONFIGURATION menu will set these automatically.

Unit Column and Unit Row

These represent the position of the display in this “array.” For example, in the 4 x 3 array of displays shown below, Unit numbering starts at the top left corner of the array. This display would have a Unit Column value of 1 and a Unit Row value of 1. Using the QUICK CONFIGURE line on the WALL CONFIGURATION menu will set these automatically.

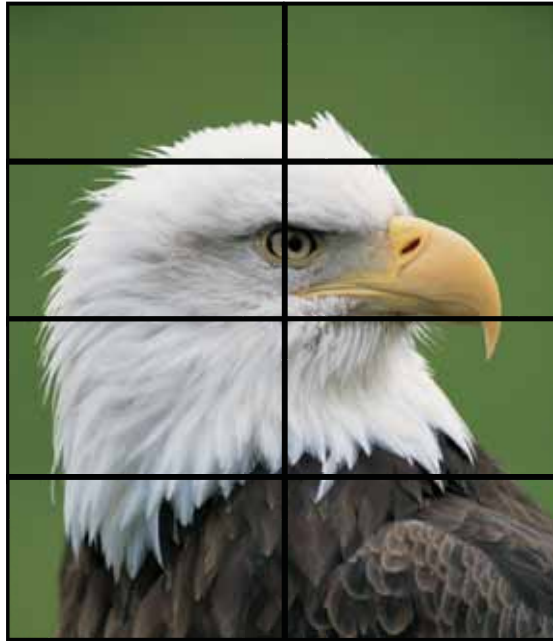
Unit Row 1 Unit Column 1	Unit Row 1 Unit Column 2	Unit Row 1 Unit Column 3	Unit Row 1 Unit Column 4
Unit Row 2 Unit Column 1	Unit Row 2 Unit Column 2	Unit Row 2 Unit Column 3	Unit Row 2 Unit Column 4
Unit Row 3 Unit Column 1	Unit Row 3 Unit Column 2	Unit Row 3 Unit Column 3	Unit Row 3 Unit Column 4
Unit Row 4 Unit Column 1	Unit Row 4 Unit Column 2	Unit Row 4 Unit Column 3	Unit Row 4 Unit Column 4

Wall Mode

When checked, this turns on the Runco’s Big Picture™ feature. When not checked, the display shows the whole picture. Using the QUICK CONFIGURE line on the WALL CONFIGURATION menu will set these automatically.

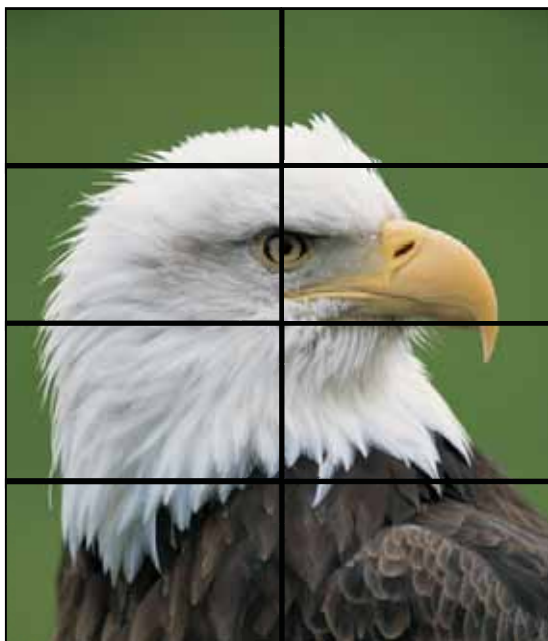
Frame Compensation

When video displays are used in an array, the intent is to display a large version of an image. However, even the thinnest of mullions break up the image oddly.



One way around this is to adjust the image. Imagine looking out a window made up of many panes of glass. The image you see is partially obscured by the frames, but your mind assembles the image and ignores the frames.

Frame compensation allows you to mimic the mind's function by "hiding" portions of the picture (as if the mullions were actually hiding the image) and allow the distributed image to appear as one very large image.



To ensure images containing diagonal lines remain correctly diagonal, turn on Frame Compensation.

Depending on how closely you space the displays, you must determine how much of the picture to "hide" behind the display's mullions and the space between displays.

Frame Height and Frame Width

Frame Height can be set to hide pixels at the top and bottom of images. Frame Width can be set to hide pixels to the left and right of images. The Frame Height and Frame Width numbers default to the correct numbers for your display, assuming they are tiled with the frames tightly together. If your installation leaves more space between the frames, you will need to increase these numbers.

Zoom and Viewport

Zoom fits the edges of a large picture - one that covers many displays' screens - from side to side and top to bottom.

To access the Zoom menus, select MAIN MENU > ADVANCED OPTIONS > SIZE AND POSITION. Then select the ZOOM TOP & LEFT menu or the ZOOM BOTTOM & RIGHT menu.

You can zoom the sides up to +100 pixels *larger* in each direction. You can also zoom the sides up to -100 pixels *smaller*, but only if that side is not the edge of the overall picture.

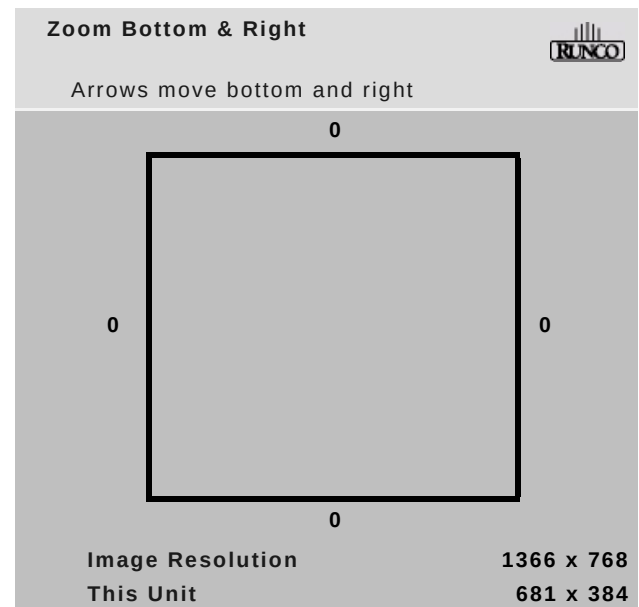
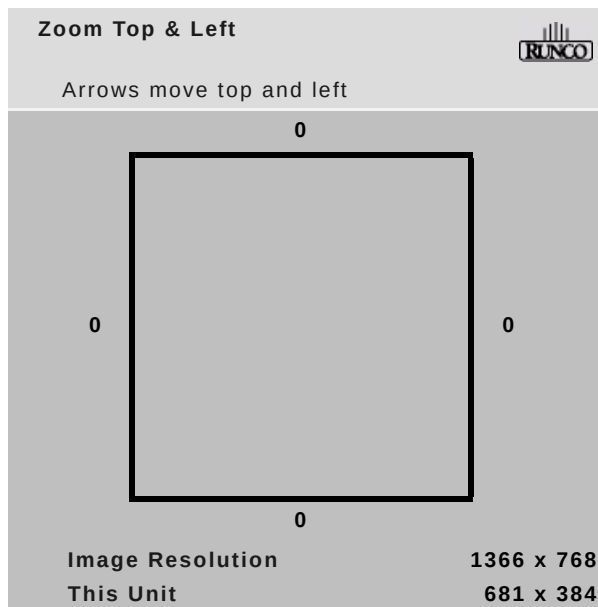
Zoom Menu Entries

Image Resolution

Shows the resolution of the source picture.

This Unit

Shows the number of pixels this display is using of all the incoming pixels.



Viewport Adjustment

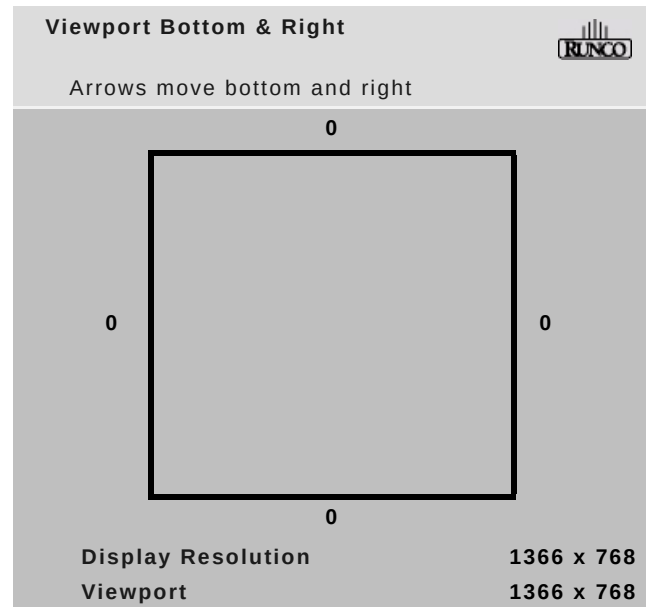
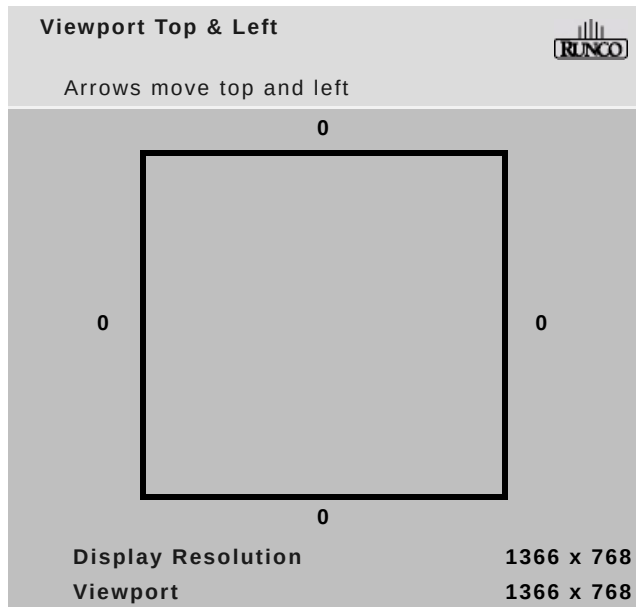
Use the VIEWPORT menu (MAIN MENU > ADVANCED OPTIONS > SIZE AND POSITION > VIEWPORT WINDOW) to adjust the number of pixels actually used on the display. You can't increase this number, but you can reduce it.

Main Menu	
	
Wall Configuration	▶
Picture	▶
Memory	▶
Diagnostics	▶
Advanced Options	▶
Program Information	>

Advanced Options	
	
Color Balance	▷
Size and Position	▶
Miscellaneous Options	▶
Backlight Settings	▶
Serial Port Settings	▶
Set Clock / Schedule Events	▶

Size & Position	
	
Picture Position	▷
Zoom Window Top & Left	▷
Zoom Window Bottom & Right	▷
Viewport Window Top & Left	▷
Viewport Window Bottom & Right	▷
Reset All Windows to Default	
* ***	Copy Settings to All Displays

Note: The COPY SETTINGS TO ALL DISPLAYS line will only appear if this menu is on the master display (A1).



Display Resolution

Shows the resolution of the display. This has nothing to do with the resolution of the source picture.

Viewport

Shows the number of display pixels being used.

Serial Port Settings and Diagnostics

If you want to control the displays remotely with RS232 commands from a computer, read this section. For more information, see "RS232 Communication" on page 57. RS232 is also used to upgrade the firmware of the Quad Input Manager Modules.

Diagnostic information is available from the UNIT STATUS and HOURS menus. For more information, see "Diagnostics" on page 91.

Serial Port Settings

To access the SERIAL PORT SETTINGS menu, press MONITOR twice on the remote.



Serial Port Settings	
ASCII Response Type	Symbolic
ASCII Response Terminator	CR
Baud Rate	19200

ASCII Response Type

Determines what type of data will be returned to the computer. For human-readable text in a serial program, choose SYMBOLIC. For computer-read data, use NUMERIC or DATA ONLY.

ASCII Response Terminator

Will be determined by what your serial program wants to see at the end of every transmission from the display.

Baud Rate

Must be the same as that used by the controlling computer. The baud rate is *not* automatically set, as it is with modem communications. It must be manually set here **and** at the computer to match each other.

Note: For firmware upgrades, you don't need to adjust the baud rate.

Serial Port Status

The SERIAL PORT STATUS menu provides diagnostic information for the serial port. To view RS232 port status, select MAIN MENU > DIAGNOSTICS > SERIAL PORT STATUS. You will see the status of the serial port that has had the most recent activity. To view the status on a different serial port, use the arrow key.

Serial Port Status RS232 ►		
<ENTER> to clear; +/- to select different serial port		
Commands Received		34
Replies Sent		34
Last Packet Type	Operation	
Last Packet Address	Not Addressed	
Bytes Received		921
Bytes Sent		773
UART Framing Errors		4
UART Overflow Errors		0
Group A	Unit: 1	19200 Baud
Most Recent		
...115, 111, 108, 117, 105, 111, 110, 63, 13		
.st--1?.st--2?.st--3?.lcd.vertical-resolution?.		

Controlling With RS232 Commands

The RS232 protocol - the “rules” for controlling displays with RS232 commands - are described in a separate document. See "Accessing Additional Runco Resources" on page 171 to see how to get to the web page. Then look for Runco WindowWall and under that the *RS232 Guide*.

Diagnostics

Most of the submenus available from the DIAGNOSTICS menu are not used on a regular basis. Examples of these menus can be found in "On-Screen Menus" on page 119.

To check status information for the system or to see usage information, use the UNIT STATUS and HOURS menus, which are explained in the following sections.

Checking Unit Status

The UNIT STATUS menu shows information for the LCD, Quad Input Manager Module and the power supply module. This can be a helpful troubleshooting tool if you are having operational issues with one of the system components.

Unit Status A1				
MX46L 010-1168		Rev 02	1366 x 768	
				
LCD	Temperature	25 °C		
	Backlight	OK		
	Voltage	24		
Quad Module		Temperature	31 °C	
		Fan Failed		
Power Supply	PS1	OK	Fan	On
	PS2	OK		
	PS3	OK		
	PS4	OK		
	Redundant	OK		

LCD

Indicates the current internal temperature at one point inside the LCD. This is not the highest or the lowest temperature of the LCD, nor an indicator of ambient temperatures. Also shows if the backlight temperature is operating within a normal range. If the voltage is below 22, there is an issue with power to the LCD. This will mostly likely be an issue with cable length or quality of the cable between the power supply module and the LCD tile.

Quad Module

Indicates the current internal temperature at one point inside the Quad Input Manager Module. This is not the highest or the lowest temperature of the LCD, nor an indicator of ambient temperatures. Also shows whether or not the fan inside in the Quad Input Manager Module is operating.

Power Supply

Indicates if individual power supplies within the power supply module are operating correctly.

Note: In order for this menu to show power supply module information correctly, the PS MON cable must be plugged in. If it is not plugged in, you will see the message "PS MON CABLE IS NOT CONNECTED."

Checking System Usage

The HOURS menu shows the hours the system and backlights have been in use. It also shows the average LCD usage information.

Hours 	
System Time	00636:45
Backlight Time	00532:00
Average Hours Per Day	0
Number of Days > 20 Hours	0

Note: The last two lines will only appear on the master (A1) display.

System Time

Number of hours the system has been plugged in. This number is counted by Quad Input Manager Module A.

Backlight Time

Number of hours that the LCD has been turned on. This information is stored in the LCD interface board.

Average Hours Per Day

Shows the average number of hours per day an LCD has been on.

Number of Days > 20 Hours

Shows the number of days that an LCD display has been on more than 20 hours per day. This feature helps installers keep displays within the normal use thermal guidelines. For more information, see "Normal Use Thermal Guidelines" on page 6.

Saving and Recalling Configurations

Advantages of Saving Configurations to Memory Slots

- You can compare multiple settings quickly
- You don't have to repeat settings when comparing entire configurations
- You can revert to a known good setting when testing new configurations

What the Memories Store

The following settings can be stored in a memory slot and recalled when needed:

- Selected source
- Resolution (and much more about the signal)
- Phase
- Sharpness
- Position and size (zoom settings)
- Everything in the ASPECT RATIO menu
- Brightness, Contrast, Hue and Saturation for video sources

All of this is stored separately for each memory slot. As an example, you could store multiple different wall setups and switch between them quickly.

Global Storage

The following settings are stored globally; that is, they are stored at the display level and are the same for all memory slots.

- Everything in the MISCELLANEOUS menu
- All the HOURS settings
- All the COLOR BALANCE settings

Memory: What Is Saved? And Where?

In the display, some parameters (values) are associated with the mode. The mode is primarily the horizontal and vertical resolution and the vertical frequency of the incoming source picture. It is more than that, but if you think of it this way, you will be close enough. Some parameters are associated with the input. The parameters specific to mode and input are saved in memory slots.

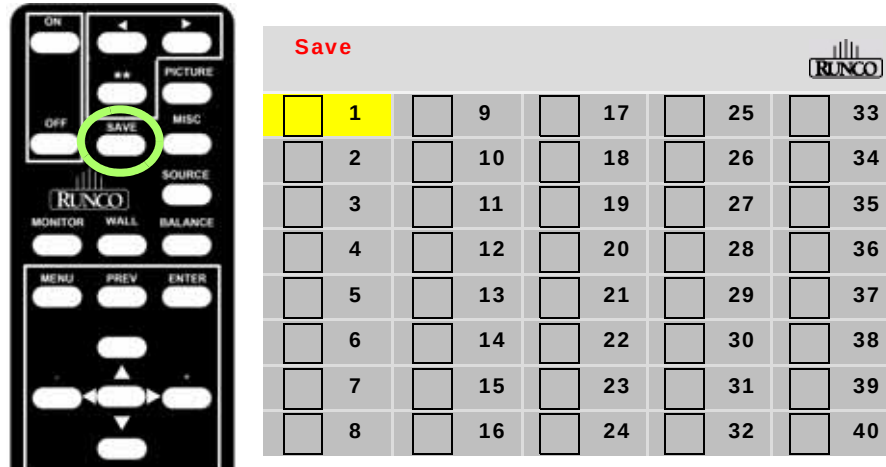
Some parameters are global. They are independent of the mode or input, and are not saved to memory slots, as shown in the table below.

Parameter	Saved in Slot	Global
ASCII Response Term.		x
ASCII Response Type		x
Auto Backlight On		x
Baud Rate		x
Black Level: R, G & B	x	
Brightness (video)	x	
Color Balance (all values)		x
Contrast (video)	x	
Hue	x	
Justify	x	
Menu Timeout		x
Overscan	x	
Plug and Play (EDID)		x
Position, Horizontal	x	
Position, Vertical	x	
Saturation	x	

Parameter	Saved in Slot	Global
Sharpness	x	
Viewport Window Bottom	x	
Viewport Window Left	x	
Viewport Window Right	x	
Viewport Window Top	x	
Wall Height	x	
Wall Mode	x	
Wall Unit Column	x	
Wall Unit Row	x	
Wall Width	x	
White Level: R, G & B	x	
Zoom Window Bottom	x	
Zoom Window Left	x	
Zoom Window Right	x	
Zoom Window Top	x	

Saving Configurations

- 1 Set up the display the way you want it.
- 2 Press the SAVE button twice.



The SAVE grid menu displays. This menu contains 40 numbered memory slots.

- 3 Using the arrow keys on the remote, navigate to a slot:
 - An unchecked slot number allows you to save new settings.
 - A checked slot has settings already saved to it. If you want, you can overwrite what's already saved.

4 Press ENTER. The SAVE SLOT menu displays.

Save			
Slot Number	(Current)	1	
Save Now	(will overwrite occupied slot)		
Name	DI 1366x768		
 Source	Digital		
 Colorspace	RGB		
 Resolution	1366 x 768		
Wall	2 x 2	1:1	
Scale/Justify	One to One / Center		
Postion/Overscan	168,19 / 0%		
Zoom UL/ LR	+0,+0 /	+0,+0	
Viewport UL/LR	+0,+0/	+0,+0	
 Frequency/Phase	1602 / 22.5°		
 Sharpness	Normal		
 Black Level	63	55	57
 White Level	166	170	169

Note: This menu shows all the settings that will be saved. You can't change anything but the name in this menu. The appearance of this menu is somewhat different for digital and video sources, reflecting what is saved for them.

- a If the current settings exactly match what is already in the memory, (CURRENT) will appear in the SLOT NUMBER line.
 - b If the memory already had data, and the only change is to the name, the phrase "will update name of occupied slot" appears in the SAVE NOW line.
 - c If this memory already has something stored in it, the phrase "will overwrite occupied slot" appears in red on the SAVE NOW line. This is the only warning.
 - d If none of these messages appear, this slot is empty.
- 5 Select SAVE NOW and press ENTER. The display instantly stores all the current settings into that memory slot.

Changing the Name of the Memory Slot

The default name is an abbreviation of the source connector, resolution, and if Wall Mode is on, wall settings. In the following example, the name tells you that the source is connected to Digital, which displays 1366 x 768, is part of a 2 x 2 array, and is the display in the upper left corner (column 1, row 1).

- 1 If you want a more descriptive name, select NAME and press ENTER.
A little bar appears beneath the NAME line.

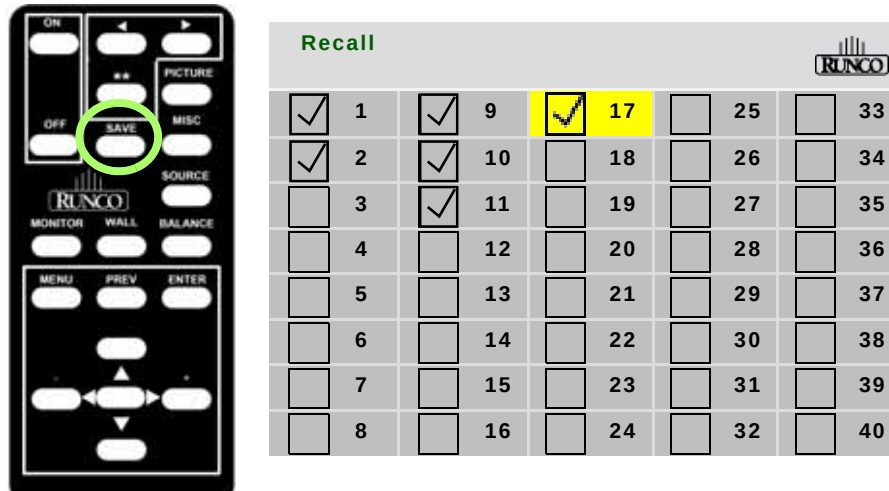
Save			
Slot Number	1		
Save Now			
Name	DI 1366x768 2x2 1:1		
 Source	Digital		
 Colorspace	RGB		
 Resolution	1366 x 768		
Wall	2 x 2	1:1	
Scale/Justify	One to One / Center		
Position/Overscan	168,19 / 0%		
Zoom UL/ LR	+0,+0 /	+0,+0	
Viewport UL/LR	+0,+0/	+0,+0	
 Frequency/Phase	1602 / 22.5°		
 Sharpness	Normal		
 Black Level	63	55	57
 White Level	166	170	169

- a Use the + or - keys to move the yellow selector under the character you want to change.
 - b Use the up/down arrows to change the character.
- 2 When you are finished, press PREV.
- 3 Select SAVE NOW and press ENTER.

Note: If you use RS232 controls, you can also use commands to send a string name to a memory slot, saving time.

Recalling Stored Configurations

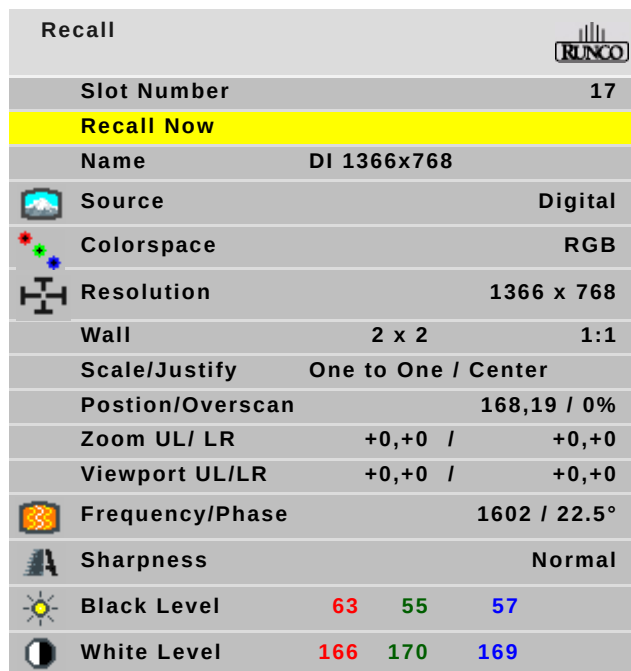
- 1 Press SAVE once to open the RECALL grid menu.



The 'Recall' grid menu is a 4x8 grid of slots. Each slot contains a checkbox and a number. Slots 1, 2, 3, 9, and 11 have checked boxes. Slot 17 is highlighted in yellow and also has a checked box. All other slots are grayed out. The Runco logo is in the top right corner.

Recall									
☒	1	☒	9	☒	17	☐	25	☐	33
☒	2	☒	10	☐	18	☐	26	☐	34
☐	3	☒	11	☐	19	☐	27	☐	35
☐	4	☐	12	☐	20	☐	28	☐	36
☐	5	☐	13	☐	21	☐	29	☐	37
☐	6	☐	14	☐	22	☐	30	☐	38
☐	7	☐	15	☐	23	☐	31	☐	39
☐	8	☐	16	☐	24	☐	32	☐	40

- 2 Navigate to the slot you want to recall. When navigating, you can only go to the checked numbers. All the slots with checks have something stored in them. The others are grayed out.
- 3 Press ENTER to open the RECALL SLOT menu.



The 'Recall' menu displays the settings for slot 17. The 'Recall Now' option is highlighted in yellow. The settings are as follows:

Recall	
Slot Number	17
Recall Now	
Name	DI 1366x768
Source	Digital
Colorspace	RGB
Resolution	1366 x 768
Wall	2 x 2 1:1
Scale/Justify	One to One / Center
Position/Overscan	168,19 / 0%
Zoom UL/ LR	+0,+0 / +0,+0
Viewport UL/LR	+0,+0 / +0,+0
Frequency/Phase	1602 / 22.5°
Sharpness	Normal
Black Level	63 55 57
White Level	166 170 169

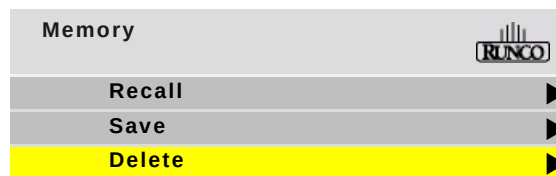
Note: If this slot number has exactly the same settings that are currently being used, a (CURRENT) message appears on the top line.

The name of the memory is listed here, as well as all the important parameters (data) stored in that memory slot.

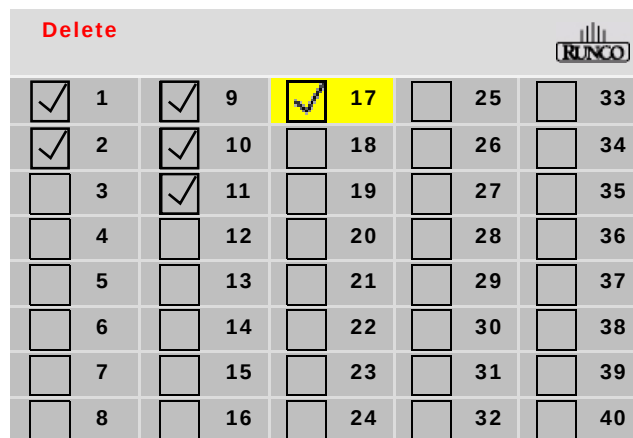
- 4 If the name is *not* the one you want, press PREV and choose another memory.
- 5 In the RECALL SLOT menu, RECALL NOW is selected. Press ENTER to recall the parameters currently displayed in the menu.
- 6 We suggest that you create a list of memory slots that contains each slot number, name and description.

Deleting a Configuration

- 1 Go to the MEMORY menu (MAIN MENU > MEMORY).



- 2 Select DELETE and press ENTER.
This opens the DELETE grid menu with 40 numbered memory slots.



- 3 Navigate with the arrow keys to the slot you want to delete and press ENTER.
When navigating, you can only go to the checked numbers. All the slots with checks have something stored in them. The others are grayed out.

- 4 In the DELETE SLOT menu, DELETE NOW is selected.

Delete			
Slot Number	17		
Delete Now			
Name	DI 1366x768		
 Source	Digital		
 Colorspace	RGB		
 Resolution	1366 x 768		
Wall	2 x 2	1:1	
Scale/Justify	One to One / Center		
Postion/Overscan	168,19 / 0%		
Zoom UL/ LR	+0,+0	/	+0,+0
Viewport UL/LR	+0,+0/	+0,+0	
 Frequency/Phase	1602 / 22.5°		
 Sharpness	Normal		
 Black Level	63	55	57
 White Level	166	170	169

- 5 Press ENTER.

Confirm Slot Delete			
Are you Sure?	Yes	No	

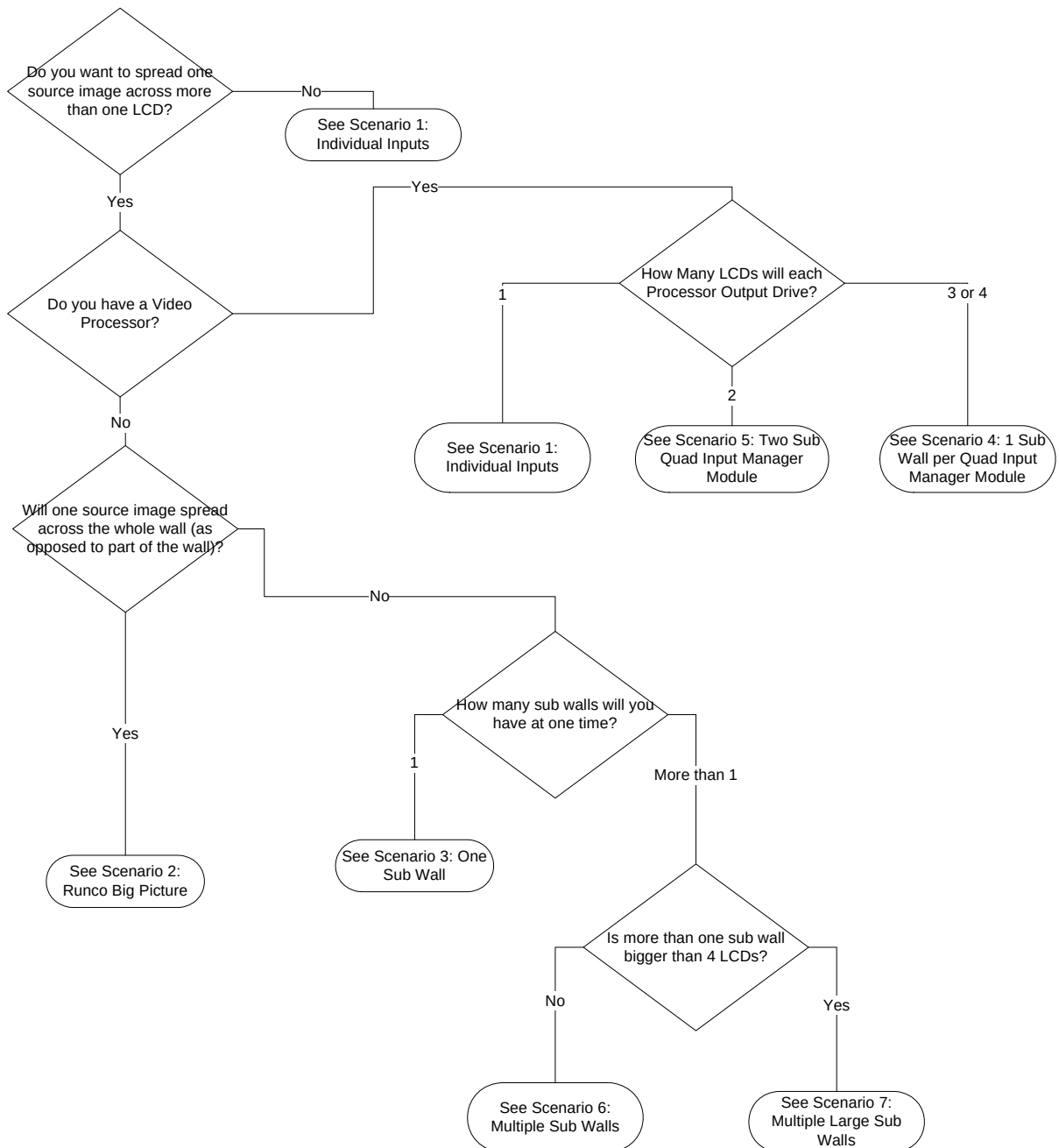
- 6 Use the left arrow to make the YES red and press ENTER.

Confirm Slot Delete			
Are you Sure?	Yes	No	

Note: It is not necessary to delete the data in a memory slot before saving new data. Saving will overwrite the stored data. (See "Saving Configurations" on page 95)

Understanding Wall Configuration

The Runco WindowWall system is quite flexible. Its digital inputs can be displayed on the LCD tiles in a variety of ways. However, it is not as flexible as a high cost matrix switcher system. This section contains examples of common scenarios that can be accomplished with the Runco WindowWall system.



Read through the scenarios below and use the flowchart on the previous page to find the ones that apply to your installation. If you fall into more than one scenario, make sure that the cabling of the system is the same for all of your configurations.

Configuration of a wall can be broken down into three parts: *cabling*, *source routing* and *wall configuration*.

Cabling consists of how the LCD tiles are connected the Quad Input Manager Modules, how the Quad Input Manager Modules Dual Link In and Loop Out connections are made and how the sources are connected to the Digital inputs.

Source Routing consists of configuring the internal video switches on each Quad Input Manager Module. These switches control which inputs are displayed on which outputs within the Quad Input Manager Module and are set on the QUAD MODULE ROUTE menu. For most of the scenarios, it is not necessary to know the details of how these switches are set, but for more complex scenarios, it is necessary to understand these switches. For an example of the QUAD MODULE ROUTE menu, see "Wall Configuration and Submenus" on page 120.

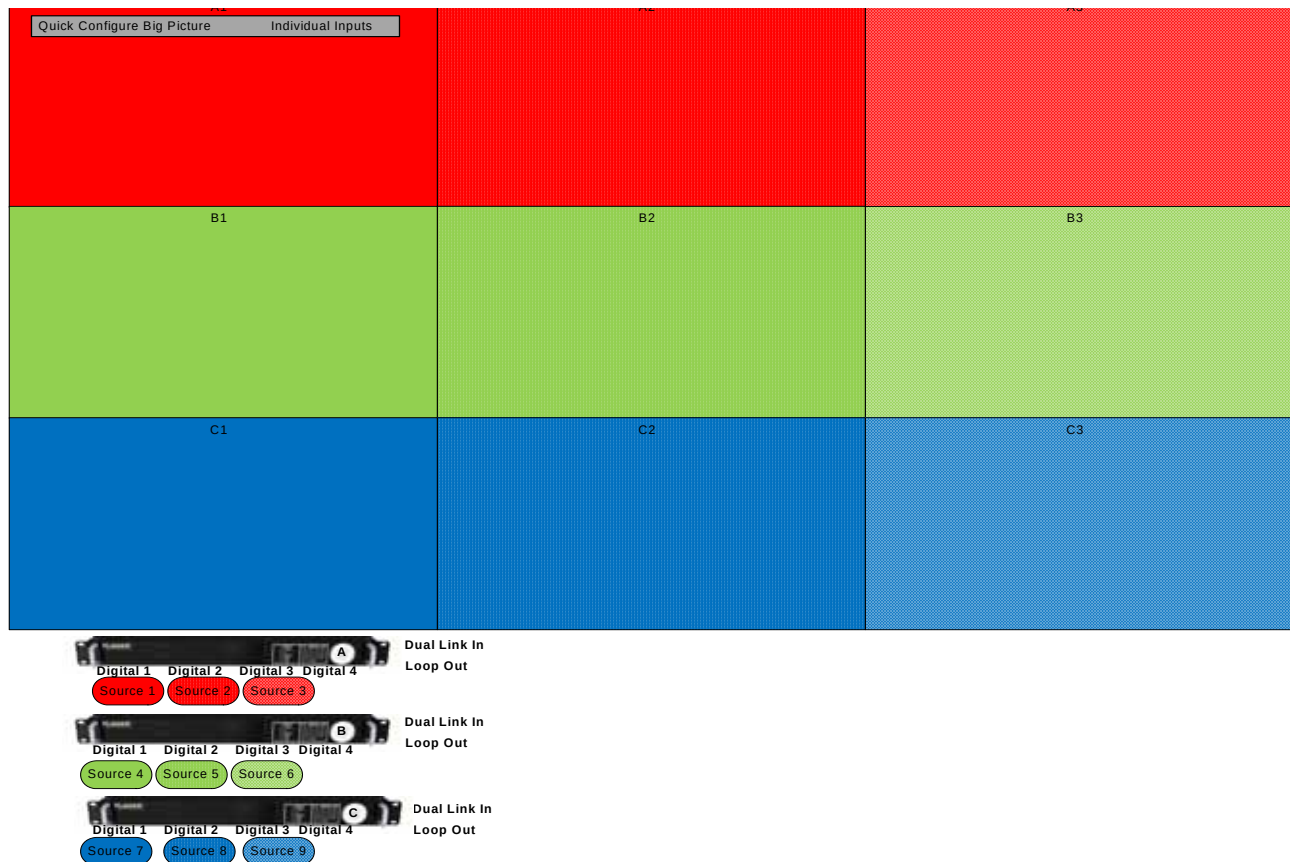
Wall Configuration consists of setting up the scaling chips in each of the four processors on the Quad Input Manager Module so the correct piece of the image is displayed on each LCD. Because the Runco WindowWall has position sensors, these settings can be done automatically in many of the scenarios.

Configuration Scenarios

Standard Cabling Scenarios

Scenarios 1,2 and 3 all use what we're calling standard cabling. It does not matter which LCDs are cabled to which Quad Input Manager Module. Scenarios 2 & 3 require standard loop through cabling, as shown on page 104.

Scenario 1: Individual Inputs



Note: 3 x 3 wall with individual inputs

The simplest way to configure a Runco WindowWall system is where each LCD displays the video from one and only one of the inputs. This scenario will be used most often with a video processor such as a Magenta Processor.

Cabling

To cable a system for individual inputs, you should keep in mind that you will need to be able to tell your video processor which inputs are in which position, so you will probably want to put the displays in some logical order in the Quad Input Manager Modules. If you have unused LCD connectors in your Quad Input Manager Module, do not use those corresponding inputs. The above example shows the cabling for this scenario. There is no need to cable the Loop Out or Dual Link In connectors for this scenario.

Source Routing

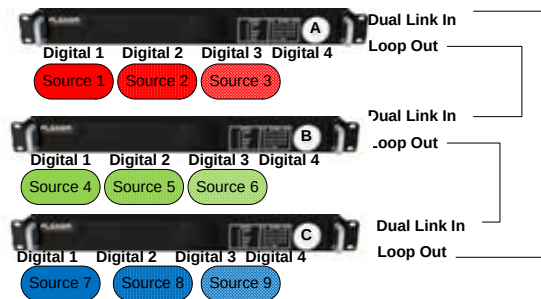
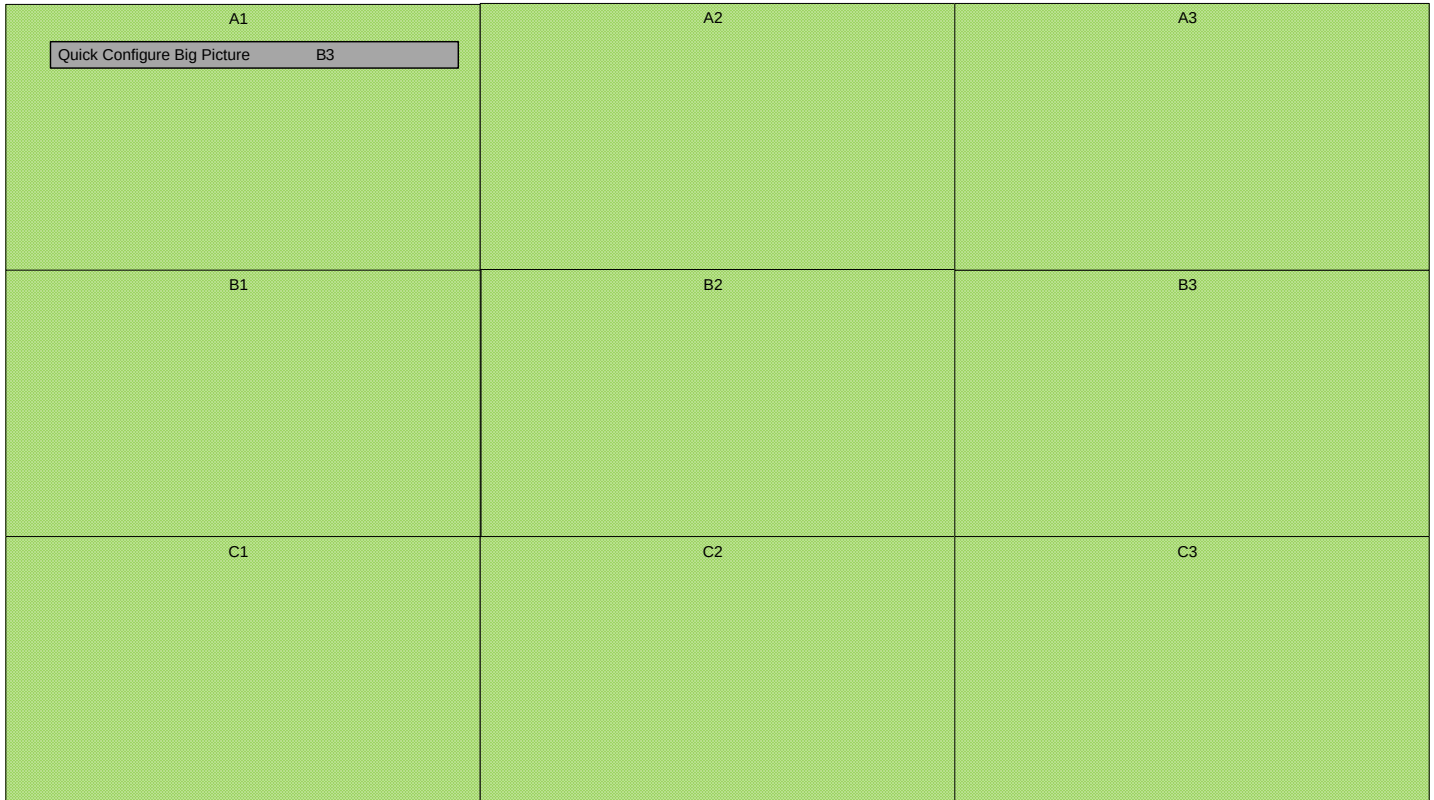
There is a quick configuration for this scenario. In order to route the sources for individual inputs, choose Individual Inputs for the QUICK CONFIGURE BIG PICTURE line in the WALL CONFIGURATION menu.

Wall Settings

Big Picture is not used in this scenario, so WALL MODE should be set to off on the BIG PICTURE SETUP menu for all displays. The Quick Configure setting takes care of this for you.

Scenario 2: Runco Big Picture

When in Runco Big Picture, one source is spread over the entire wall. In the Runco WindowWall product, any input can easily be used as the source for big picture.



Note: 3 x 3 wall using Runco Big Picture. Any input can be spread over the whole wall.

Cabling

Because the Runco WindowWall has position sensing, LCDs can be cabled to the Quad Input Manager Modules in any way that is convenient. Keep in mind that most of the configuration menus will appear on the module connected to LCD 1 on the A Quad Input Manager Module so you may want to put that one in a convenient location.

The Loop Out connector of each Quad Input Manager Module should be connected to the Dual Link In connector of the next module. The final Loop Out connector should be connected back to the Dual Link In connector of the first module.



Note: Cabling video loop connections.

Source Routing

There is a quick configuration for Runco Big Picture. Choose the input you want to display on the whole wall for the QUICK CONFIGURE BIG PICTURE line in the WALL CONFIGURATION menu. In order for this Quick Configure to work correctly, you must have previously allowed the system to discover its display positions by choosing AUTO in the MATRIX LAYOUT menu.

Wall Configuration

Each display's wall configuration is set up automatically by the Quick Configure setting. Wall Mode is turned on, the wall width and wall height is set to the width and height of the Runco WindowWall, and each display's row and column are setting according to its position.

Scenario 3: One Sub Wall and Individual Inputs

In this scenario, one input is spread over multiple LCDs, while the rest of the LCDs display individual inputs. This scenario may be used in a control room, where each display is monitoring a particular source, and at a command, one input may be magnified for more detailed viewing. The size of the sub wall in this scenario does not matter. The examples show a 2 x 2 sub wall in a 3 x 3 Runco WindowWall, but you could also have a 3 x 5 sub wall in a 6 x 6 wall, or any other configuration. The restriction is that there is only one sub wall in the Runco WindowWall. The other displays are showing individual inputs.

Cabling

The cabling for this scenario is the same as for the Big Picture Scenario. The Quad Input Manager Modules must be looped together by use of the Dual Link In and Loop Out Connectors (see page 105 for an example). There is no restriction on which displays are connected to which Quad Input Manager Modules but you will want to cable them in an orderly fashion so it is easy for you to associate each input with a particular Quad Input Manager Module.

Source Routing

There are no quick configure settings for this scenario. You will need to set up the source routing and wall settings for each sub wall configuration and save those settings to a slot. To set up source routing, use the QUAD MODULE ROUTE menu for each Quad Input Manager Module. This menu has two parts, each of which gives a different view of the same settings. If you use one part of the menu, the other will automatically update. The following diagrams use only the lower part of the menu. For simplicity, the rest of the menu is not shown.

In the following diagrams, the settings from the QUAD MODULE ROUTE menu are shown on the side of the diagram and these menus will appear on display A1.

Wall Settings

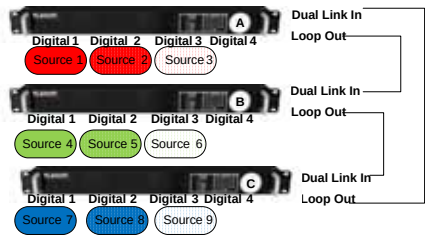
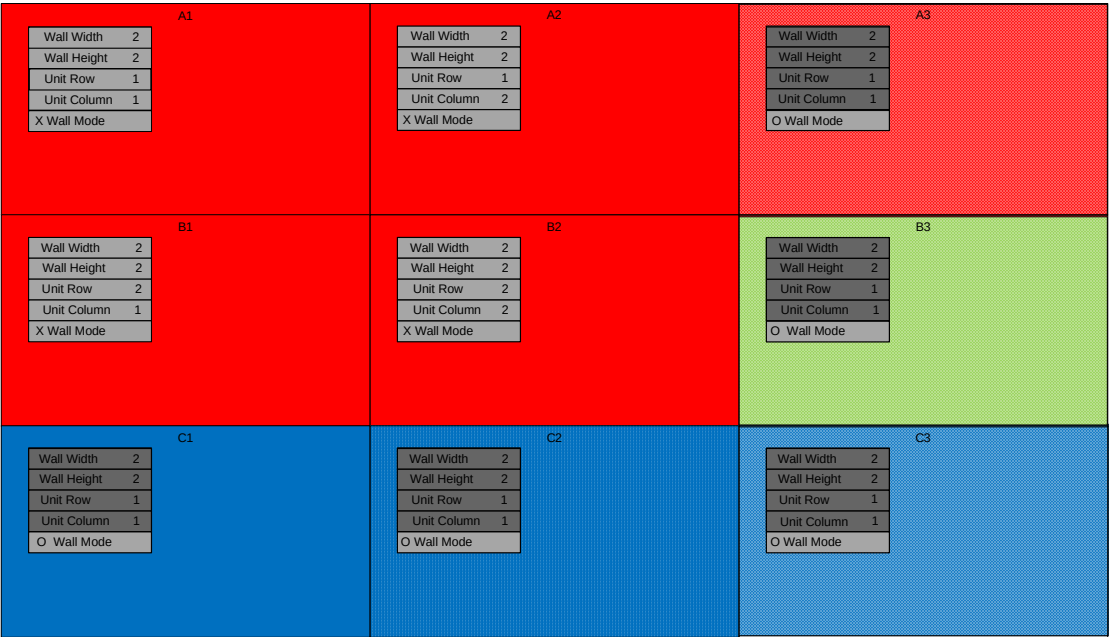
Once the source is routed, you still need to tell each processor which portion of the source to show. This is done in the BIG PICTURE SETUP menu on each processor. An LCD that is displaying an individual source should have WALL MODE turned off. An LCD that is part of a sub wall should have its height and width parameters set to the sub wall height and width, and its unit row and column parameters set to the row and column within that sub wall.

In the diagrams that follow, a darkened bar over a settings means that setting is not necessary for this scenario and it doesn't matter to what it is set.

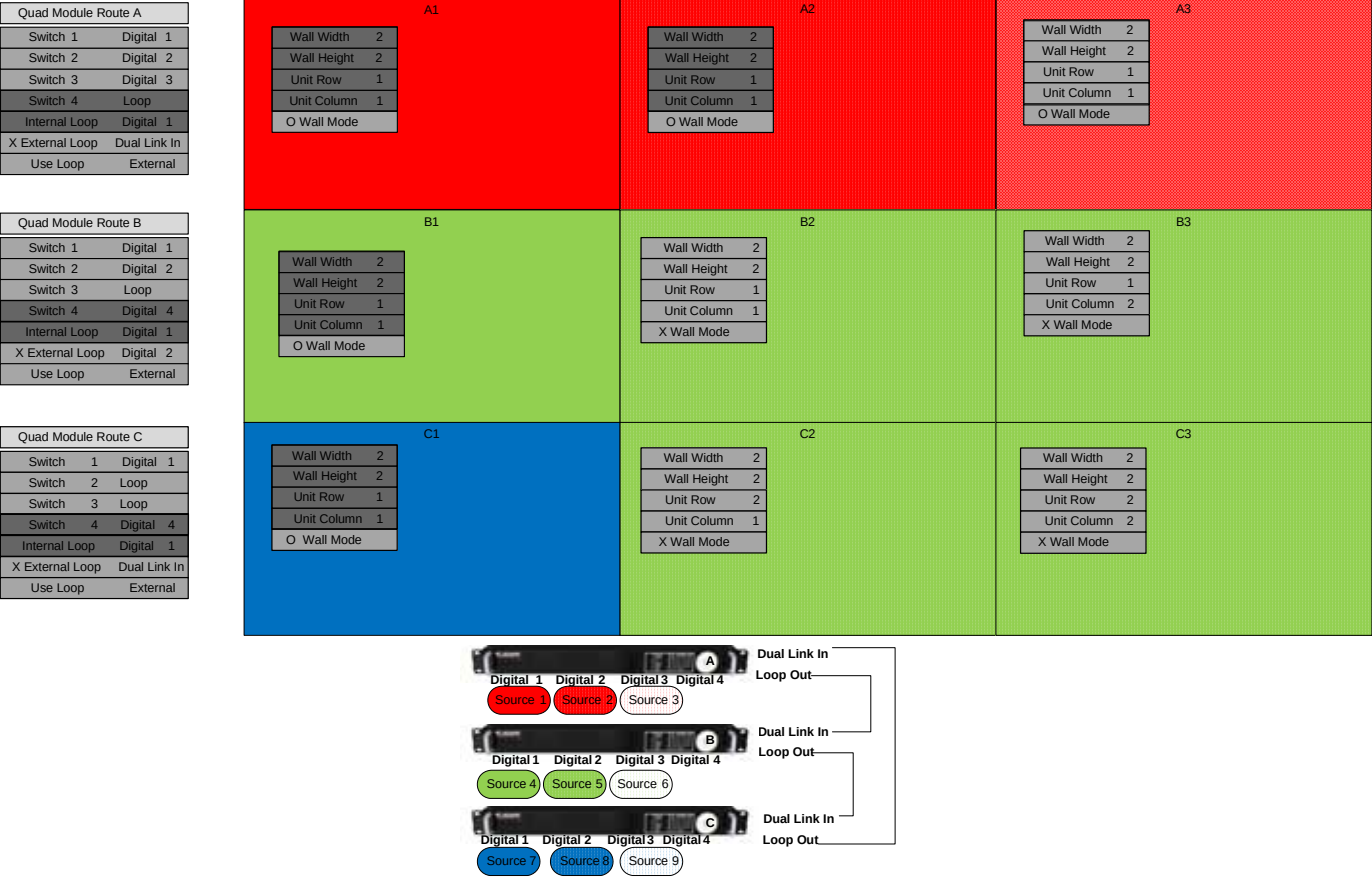
Quad Module Route A	
Switch 1	Loop
Switch 2	Loop
Switch 3	Digital 3
Switch 4	Loop
Internal Loop	Digital 1
X External Loop	Digital 1
Use Loop	External

Quad Module Route B	
Switch 1	Loop
Switch 2	Loop
Switch 3	Digital 3
Switch 4	Digital 4
Internal Loop	Digital 1
X External Loop	Dual Link In
Use Loop	External

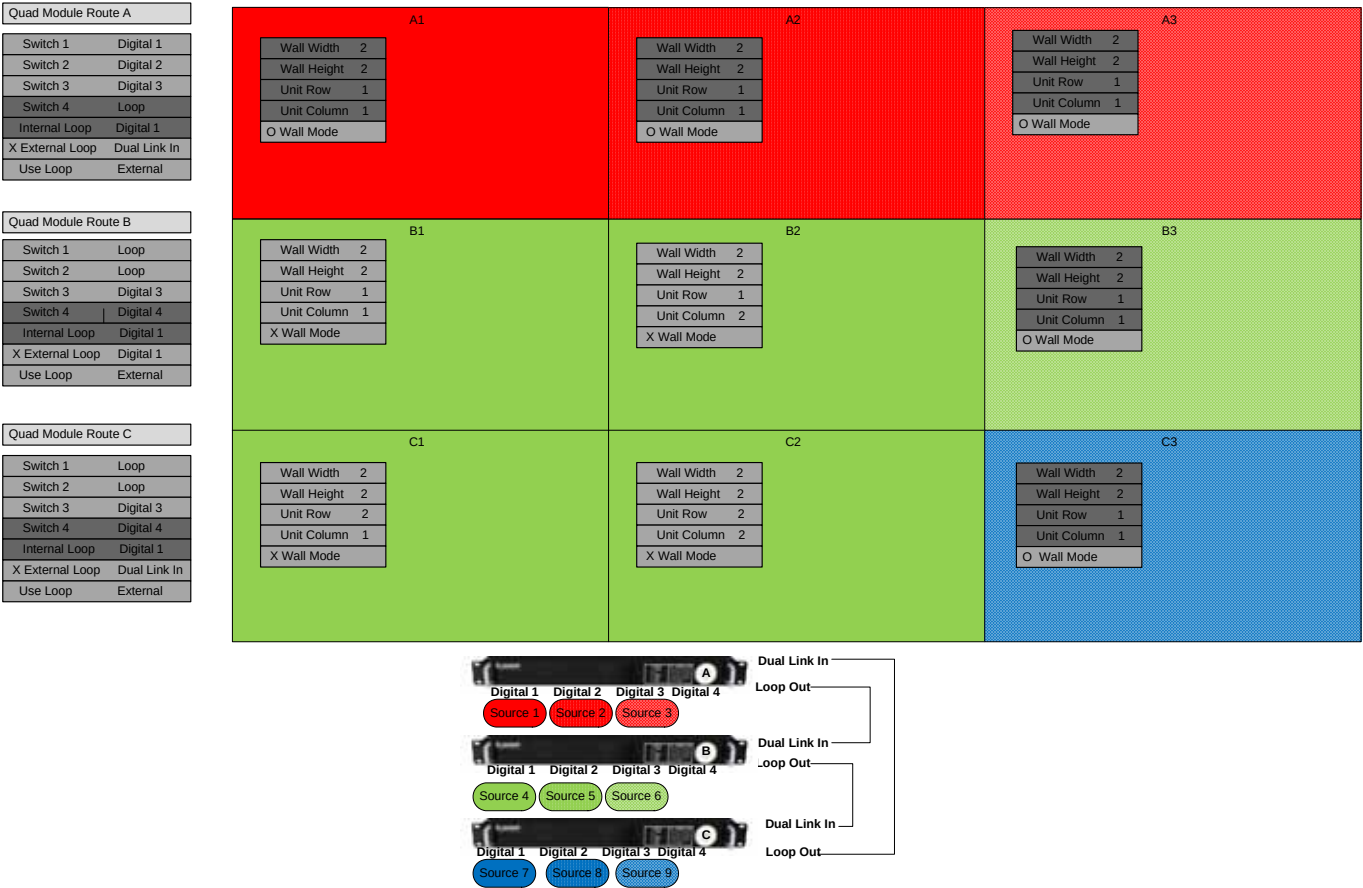
Quad Module Route C	
Switch 1	Digital 1
Switch 2	Digital 2
Switch 3	Digital 3
Switch 4	Digital 4
Internal Loop	Digital 1
X External Loop	Dual Link In
Use Loop	External



Note: 3 x 3 Runco WindowWall with 2 x 2 sub wall, upper left displaying source A1.



Note: 3 x 3 Runco WindowWall with 2 x 2 sub wall, lower right displaying source B2.



Note: 3 x 3 Runco WindowWall with 2 x 2 sub wall, lower left displaying source B1.

Standard Cabling With Restrictions on LCD Placement

Scenarios 4, 5 & 6 require a little more planning than the previous scenarios. The LCDs are cabled to specific Quad Input Manager Modules depending on how they will be used in sub walls. A system cabled for one of these scenarios can also use scenarios 1, 2 or 3.

Scenario 4: One Sub Wall Per Quad Input Manager Module

This scenario uses an external video processor, but saves on the number of outputs required for that processor. Each output of the processor drives four LCDs. The processor outputs can be a higher resolution than the native 1366 x 768 resolution of the tile, thus allowing for better use of the available pixels.



Note: 4 x 4 Runco WindowWall with one source per Quad Input Manager Module.

Cabling

Cable the LCDs so each Quad Input Manager Module controls a 2 x 2 square of LCDs. The order within the square does not matter because the position sensors will be used. Cable each output of the video processor to the same numbered input in each Quad Input Manager Module. This could be Digital 1, Digital 2, Digital 3 or Digital 4. It is not necessary to cable the Loop Out connector of the Quad Input Manager Module.

Source Routing

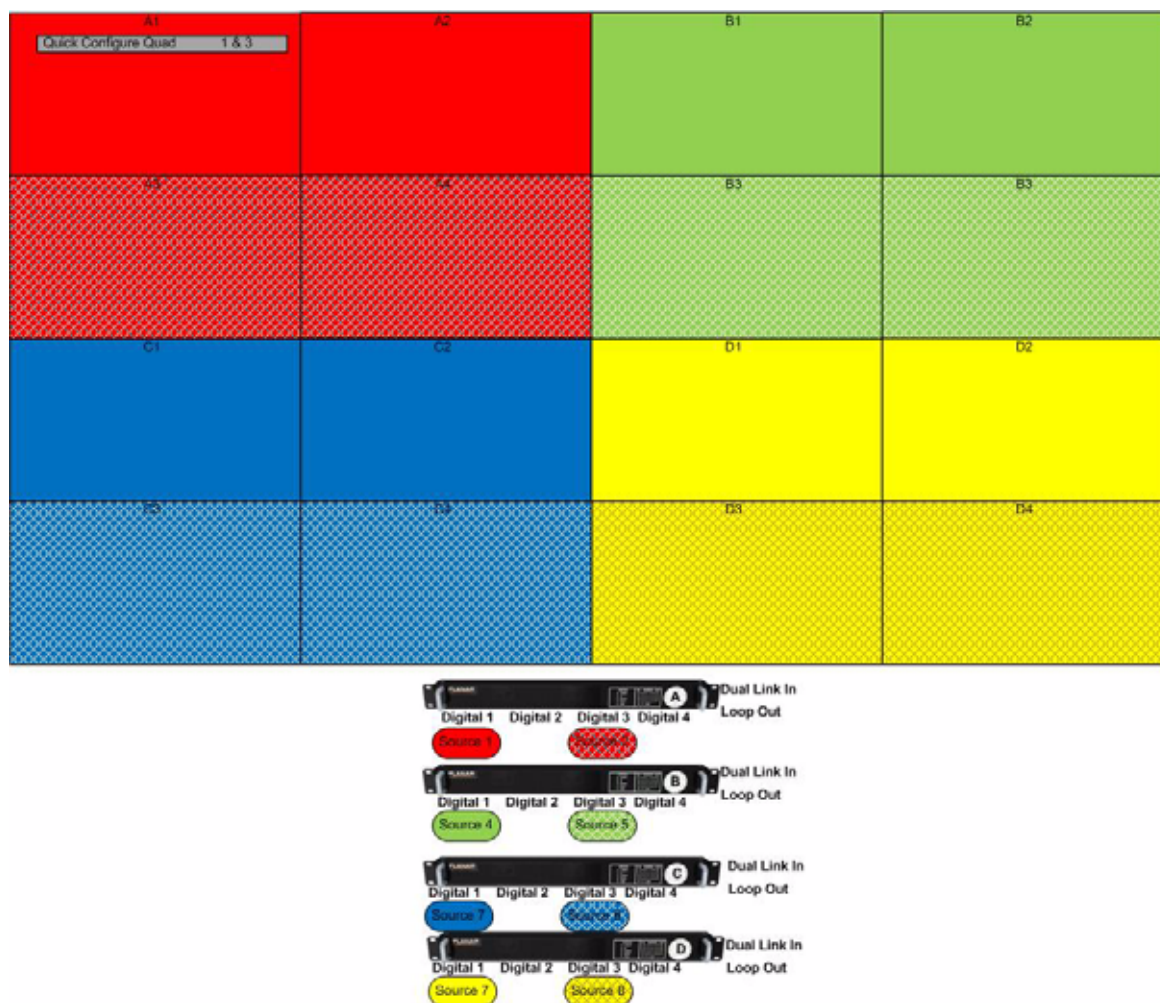
The QUICK CONFIGURE QUAD setting in the WALL CONFIGURATION menu is used to configure this scenario. If you have cabled the sources to Digital 1, use Quick Configure Quad 1, if you have cabled the sources to Digital 2, use Quick Configure Quad 2 etc.

Wall Settings

By choosing the Quick Configure, the system will configure each LCD automatically. Because the settings are different for each LCD, the system must send many commands to each LCD. Quick Configure Quad takes a bit longer to respond than other Quick Configure settings. Note that the LCDs connected to each Quad Input Manager Module must be in a rectangle. If they are not, the wall settings will not be set, although the Source Routing will still take place. The rectangle does not have to be 2 x 2. For example, a wall may not have even multiples of four LCDs. Quick Configure Quad will set the wall parameters to the number and size of LCDs on that Quad Input Manager Module, be it 2 x 1, 1 x 2, 1 x 3 etc. The external video processor outputs must be configured accordingly.

Scenario 5: Two Sub Walls Per Quad Input Manager Module

This scenario uses an external video processor, but saves on the number of outputs required for that processor. Each output of the processor drives two LCDs. The processor outputs can be a higher resolution than the native 1366 x 768 resolution of the tile, thus allowing for better use of the available pixels.



Note: 4 x 4 Runco WindowWall with two high resolution sources per Quad Input Manager Module.

Cabling

Cable the LCDs so each pair of LCDs that you will use for a sub wall are adjacent to each other. These can be 1 x 2 or 2 x 1 rectangles; the position sensors will be used to determine how they are arranged. Cable the outputs of the video Digital 1 and Digital 3. The source on Digital 1 will be spread over LCD 1 and LCD 2. The source on Digital 3 will be spread over LCD 3 and LCD 4. It is not necessary to cable the Loop Out connector of the Quad Input Manager Module.

Source Routing

The QUICK CONFIGURE QUAD setting in the WALL CONFIGURATION menu is used to configure this scenario. Use Quick Configure Quad 1 & 3.

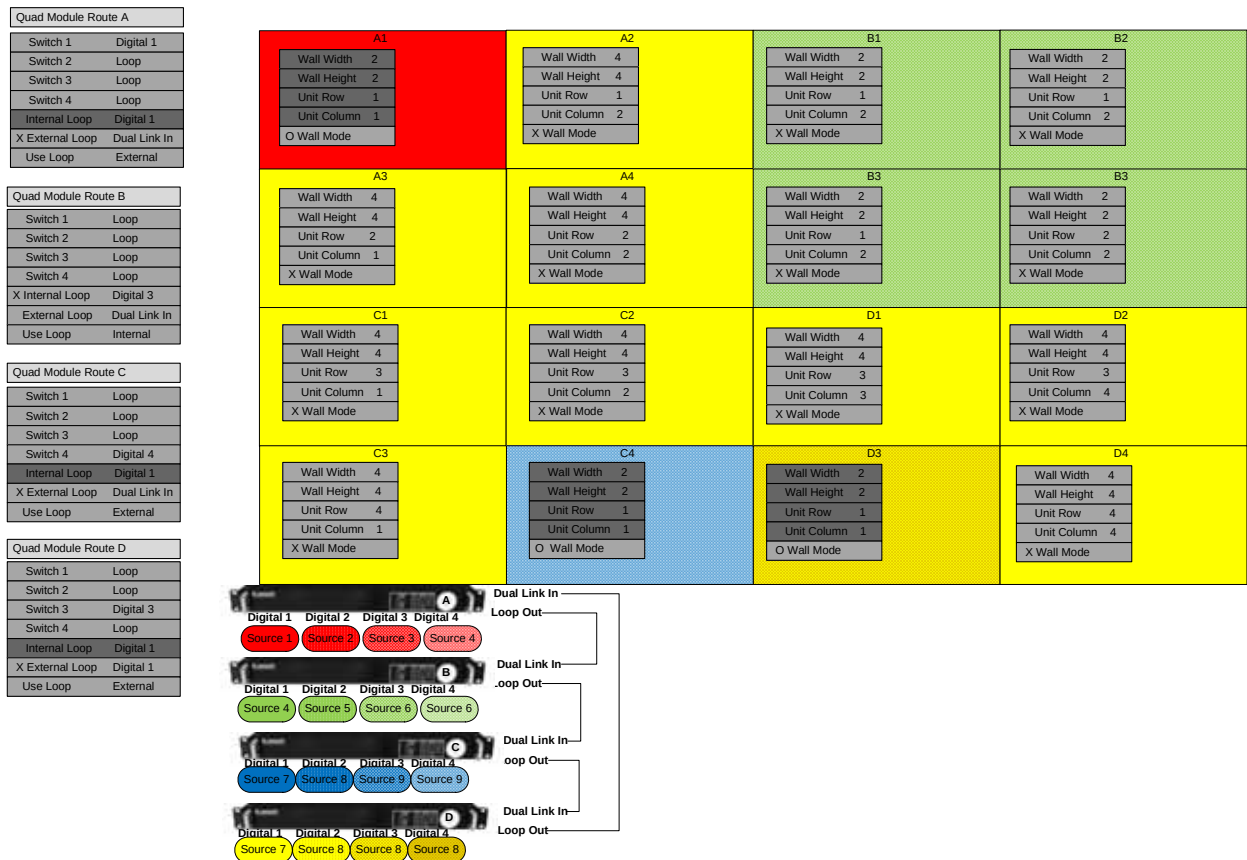
Wall Settings

By choosing the Quick Configure, the system will configure each LCD automatically. Because the settings are different for each display, the system must send many commands to each LCD. Quick Configure Quad takes a bit longer to respond than other Quick Configure settings.

Scenario 6: Multiple Sub Walls

It is possible to have more than one sub wall at one time on a Runco WindowWall if certain rules are followed:

- One sub wall can be any size and use any input. This sub wall will use the External Loop.
- All the other sub walls must fit within a single Quad Input Manager Module. This means they will be 2 x 2 or smaller.



Note: 4 x 4 Runco WindowWall with one large and one small sub wall.

Cabling

Cluster the displays into the groups where you want your small sub walls, and cable each sub wall to a single Quad Input Manager Module. Cable the Loop Out of each Quad Input Manager Module to the Dual Link In of the next module and loop the last loop out into the Dual Link In of the first module.

Source Routing

For the Quad Input Manager Modules that are displaying a small sub wall, set each switch to Loop, Use Internal Loop and set the Internal Loop to the display you want to view on that sub wall.

For each display that is part of the large sub wall, set each switch to Loop, and Use External Loop.

Set the External Loop of the Quad Input Manager Module that contains the source for the large sub wall to that source. Set the External Loop of all the other Quad Input Manager Modules to Dual Link In.

Wall Settings

Set the height and width for each display within a sub wall to the height and width of that sub wall and set the unit row and unit column as appropriate.

Complex Configurations

It is possible to design systems that don't fall into any of the above scenarios, but not all combinations of inputs on sub walls are possible. A system cabled for such a complex configuration may or may not be able to also have some of the simpler configurations.

Scenario 7: Multiple Large Sub Walls

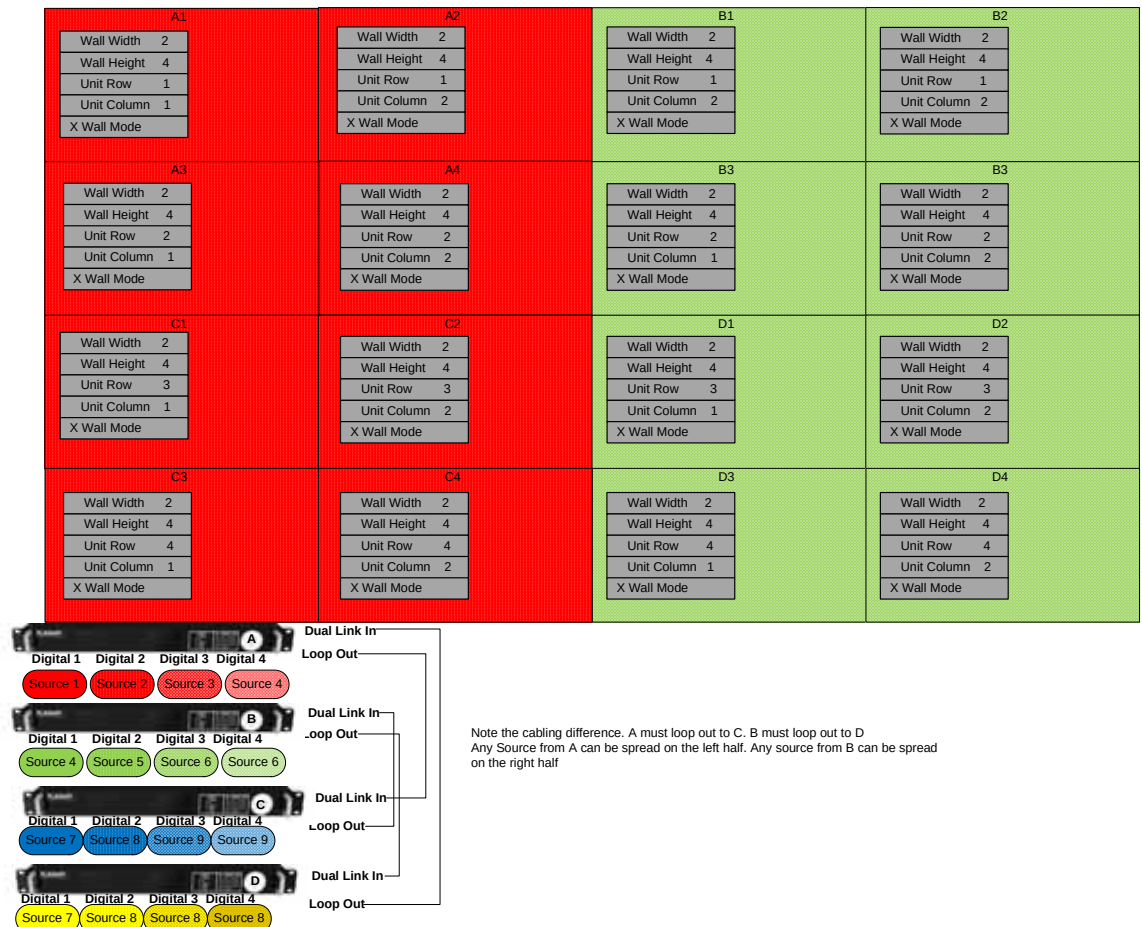
The previous scenario was restricted such that only one sub wall in a Runco WindowWall could be larger than a single Quad Input Manager Module. If you desire more than one sub wall that is larger than four displays, there are certain restrictions. You must cable the loop connections sequentially among the quad modules that make up each sub wall. Since a sub wall that spans more than one Quad Input Manager Module module uses the external loop, a sub wall is restricted to using inputs from only the first Quad Input Manager Module in the loop through chain.

Quad Module Route A	
Switch 1	Loop
Switch 2	Loop
Switch 3	Loop
Switch 4	Loop
Internal Loop	Digital 1
X External Loop	Digital 2
Use Loop	External

Quad Module Route B	
Switch 1	Loop
Switch 2	Loop
Switch 3	Loop
Switch 4	Loop
Internal Loop	Digital 3
External Loop	Digital 3
Use Loop	External

Quad Module Route C	
Switch 1	Loop
Switch 2	Loop
Switch 3	Loop
Switch 4	Loop
Internal Loop	Digital 1
X External Loop	Dual Link In
Use Loop	External

Quad Module Route D	
Switch 1	Loop
Switch 2	Loop
Switch 3	Loop
Switch 4	Loop
Internal Loop	Digital 1
X External Loop	Dual Link In
Use Loop	External



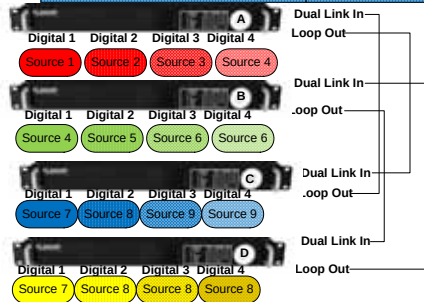
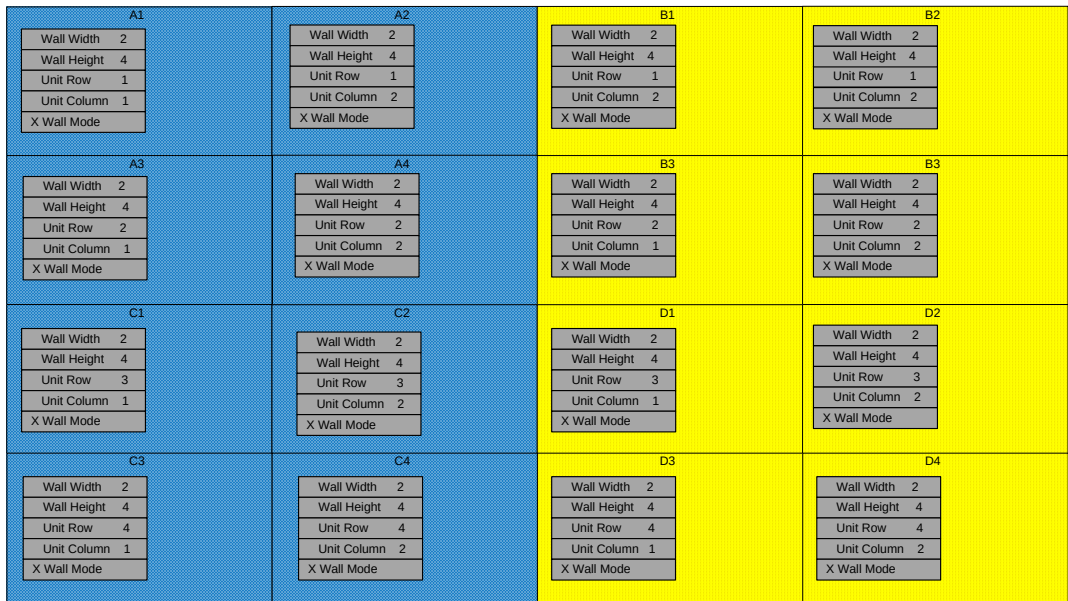
Note: 4 x 4 Runco WindowWall with two 4 x 2 sub walls. One Big Picture is also available, but each sub wall is limited to four sources.

Quad Module Route A		
Switch 1	Loop	
Switch 2	Loop	
Switch 3	Loop	
Switch 4	Loop	
Internal Loop	Digital 1	
X External Loop	Dual Link In	
Use Loop	External	

Quad Module Route B		
Switch 1	Loop	
Switch 2	Loop	
Switch 3	Loop	
Switch 4	Loop	
Internal Loop	Digital 3	
External Loop	Digital 3	
Use Loop	External	

Quad Module Route C		
Switch 1	Loop	
Switch 2	Loop	
Switch 3	Loop	
Switch 4	Loop	
Internal Loop	Digital 1	
X External Loop	Digital 3	
Use Loop	External	

Quad Module Route D		
Switch 1	Loop	
Switch 2	Loop	
Switch 3	Loop	
Switch 4	Loop	
Internal Loop	Digital 1	
X External Loop	Digital 2	
Use Loop	External	



Note the cabling difference. A must loop out to C and C back to A. B must loop out to D and D back to B. Any Source from A or C can be spread on the left half. Any source from B or D can be spread on the right half. This configuration cannot be used for one input on the whole wall.

Note: Runco WindowWall with two 4 x 2 sub walls. One Big Picture is **not** available, but each sub wall can have eight different sources.

Cabling

Cluster the displays into the groups where you want your sub walls, and cable each sub wall to Quad Input Manager Module that are sequentially looped together. If you want to be able to also spread an input across the whole wall (Scenario 2), you must complete a single loop.

If you want to be able to spread more inputs across the sub wall than will fit on one Quad Input Manager Module, you can split the wall into separate loops.

Source Routing

For each display that is part of a large sub wall, set each switch to Loop, and Use External Loop.

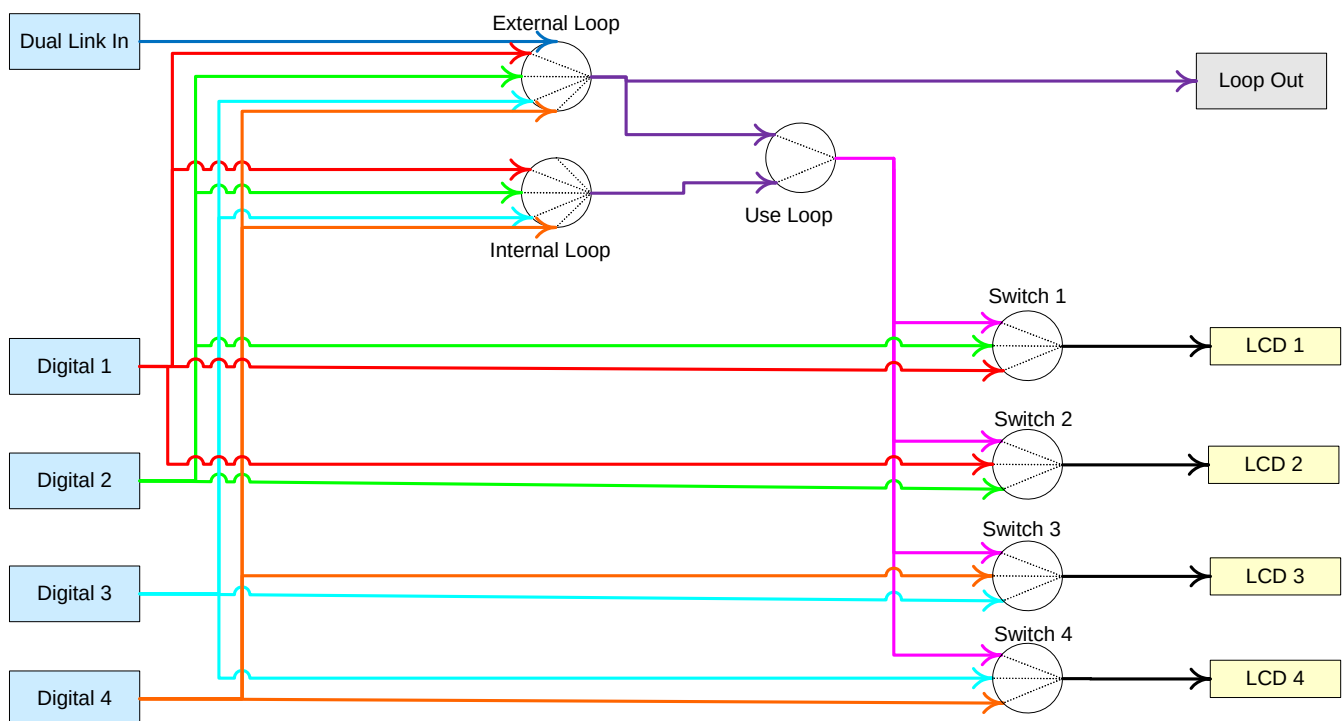
Set the External Loop of the Quad Input Manager Module that contains the source for a large sub wall to that source. Set the External Loop of all the other Quad Input Manager Modules to Dual Link In. Note that the source for the sub wall must be in the first Quad Input Manager Module unless you have looped the sub wall back on itself.

Wall Settings

Set the height and width for each display within a sub wall to the height and width of that sub wall and set the unit row and unit column as appropriate.

Understanding the Quad Module Route Menu

Each Quad Input Manager Module has five digital video inputs: inputs 1-4 and a Dual Link loop input. Each module has four LCD connections and a Digital Loop out DVI connector. Within each Quad Input Manager Module is a set of electronic switches that allow video to flow from one of the inputs to one of the LCDs and to the Digital Loop Out connector. The example below shows a pictorial representation of these switches. Each circle in the drawing represents one switch. For each switch, you can choose one of the input arrows to flow to the output of that switch which in turn may flow to another switch or to one of the Quad Input Manager Module outputs.



Note: Representation of the Quad Input Manager Module video switches.

- An LCD can display its own digital input, its immediate neighbor or the “loop”.
- The loop out connector can display any of the five inputs.
- The “loop” can be any of the four inputs. It can also be the Dual Link in connector but in that case, the Loop Out connector must also be displaying the Dual Link In input.

The QUAD MODULE ROUTE menu allows you to set these switches. There is one QUAD MODULE ROUTE menu for each Quad Input Manager Module in your system. There are two parts to the menu. Each part gives the same information in a different way. The top part of the menu shows you what input (1,2,3,4 or Link In) will be shown on each output (LCD 1, LCD 2, LCD 3, LCD 4 and Loop Out).

The bottom part of the menu shows you how each of the seven switches are set. You can change the switches using either part of the menu. The other part will automatically update. It may be frustrating to try to make changes in the switches using the top part of the menu, because not every combination of input to output is allowed. Changing one line on the top may cause changes in other lines. On the other hand, using the bottom part of the menu sets the switches directly so there are no disallowed states. As you set the switches on the bottom part of the menu, the top part of the menu will change to show the effect of your changes.

All of the scenarios in this document use only the bottom part of the menu to set up source routing.

Quad Module Route A					
	1	2	3	4	Link In
LCD 1	☐	☐	☒	☐	☐
LCD 2	☐	☐	☒	☐	☐
LCD 3	☐	☐	☒	☐	☐
LCD 4	☐	☐	☒	☐	☐
Loop Out	☐	☐	☐	☒	☐
Switch 1					Loop
Switch 2					Loop
Switch 3					Loop
Switch 4					Loop
☒ Internal Loop	Digital 3				
☐ External Loop	Digital 4				
Use Loop					Internal

Note: Quad Module Route A menu.

On-Screen Menus

Main Menu and Submenus

Main Menu	
	
Wall Configuration	▶
Picture	▶
Memory	▶
Diagnostics	▶
Advanced Options	▶
Program Information	>

Wall Configuration	
	
Quick Configure Big Picture	Big Picture A3 ▶
Big Picture Setup	▷
Matrix Layout	▶
Quad Module A Route	▶
☒ Enable High Resolution and Dual Link Inputs	
Synchronize High Resolutions	

Picture	
Stretch/shrink the image 	
Picture Information	>
Picture Setup	▷
Aspect Ratio	▷

Memory	
	
Recall	▶
Save	▶
Delete	▶

Diagnostics	
	
Unit Status	>
Serial Port Status	>
Test Patterns	▷
Setup Summary	>
Hours	>

Advanced Options	
	
Color Balance	▷
Size and Position	▶
Miscellaneous Options	▶
Backlight Settings	▶
Serial Port Settings	▶
Set Clock / Schedule Events	▶

Program Information	
	
Runco International	
1195 NW Compton Drive	
Beaverton, OR 97006-1992, USA	
+1.800.237.8626	
www.runco.com	
MX46 1366 x 768	
010-1168 Rev 02	
Code Generated Date: Feb 8 2010 at 16:09:07	
LCD Interface: 01:Jan 07 2010 14:17:36	
FPGA Version: 11	

Wall Configuration and Submenus

Wall Configuration



Quick Configure Big Picture

<select>

▶

Big Picture Setup

▷

Matrix Layout

▶

Quad Module A Route

▶

☒ Enable High Resolution and Dual Link Inputs

Synchronize High Resolutions

Quick Configure



Spread input over entire wall

A1	A2	A3	A4	B1	B2	B3	B4
C1	C2	C3	C4				
DLink							
Quad 1	Quad 2	Quad 3	Quad 4	1 & 3	DLink		No BP

Big Picture Setup



Matrix Position

3x3

1:1

Wall Width

3

Wall Height

3

Unit Column

1

Unit Row

1

☐ Wall Mode

☐ Frame Compensation

↕

Frame Height

10 pixels

↔

Frame Width

10 pixels

*

Copy Settings to All Displays

Wall Configuration and Submenus Continued

Wall Configuration	
	
Quick Configure Big Picture	<select> ►
Big Picture Setup	►
Matrix Layout	►
Quad Module A Route	►
☒ Enable High Resolution and Dual Link Inputs	
Synchronize High Resolutions	

Matrix Layout							
							
Auto			Quick			Reset	**
A1	A2	A3					
B1	B2	B3					
C1	C2	C3					

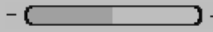
Depending on how many Quad Input Manager Modules you have, the number of Quad Module “N” Route lines will be reflected on this menu. For this example, there are three Quad Input Manager Modules. This menu could show all the way from Quad Module A Route through Quad Module P Route.

Quad Module Route A					
					
	1	2	3	4	Link In
LCD 1	☐	☐	☒	☐	☐
LCD 2	☐	☐	☒	☐	☐
LCD 3	☐	☐	☒	☐	☐
LCD 4	☐	☐	☒	☐	☐
Loop Out	☐	☐	☐	☒	☐
Switch 1					Loop
Switch 2					Loop
Switch 3					Loop
Switch 4					Loop
☒ Internal Loop					Digital 3
☐ External Loop					Digital 4
Use Loop					Internal

Picture Menu and Submenus

Picture 	
Stretch/shrink the image	
Picture Information	>
Picture Setup	>
Aspect Ratio	>

Picture Information 	
Sync	(frame locked) Progressive
Vertical Frequency	60Hz
Horizontal Frequency	50.00kHz
Pixel Frequency	80.10MHz
 Horizontal Resolution	1366
 Vertical Resolution	768

Input Levels 	
 Colorspace	RGB
Center Point	255 255 255
 Black Level (offset) - All	
Red	-  + 128
Green	-  + 128
Blue	-  + 128
 White Level (gain) -All	
Red	-  + 120
Green	-  + 154
Blue	-  + 122
 Set to Nominal for RGB Levels (0-255)	
 Set to Nominal for Video Levels (16-235)	
* *** Copy Settings to All Displays	

Note: The COPY SETTINGS TO ALL DISPLAYS line will only appear if this menu is on the master display (A1).

Note: If the COLORSPACE is YCbCr, this menu shows BRIGHTNESS, CONTRAST, SATURATION and HUE instead of BLACK LEVEL and WHITE LEVEL and of the their related settings.

Aspect Ratio 	
 Scale Mode	16 x 9
Justify	Center
Overscan	0%
 Sharpness	-  + 4

Memory Menu and Submenus

Memory	
Recall	▶
Save	▶
Delete	▶

Recall					
☒	1	☒	9	☒	17
☒	2	☒	10	☐	18
☐	3	☒	11	☐	19
☐	4	☐	12	☐	20
☐	5	☐	13	☐	21
☐	6	☐	14	☐	22
☐	7	☐	15	☐	23
☐	8	☐	16	☐	24

Save					
☐	1	☐	9	☐	17
☐	2	☐	10	☐	18
☐	3	☐	11	☐	19
☐	4	☐	12	☐	20
☐	5	☐	13	☐	21
☐	6	☐	14	☐	22
☐	7	☐	15	☐	23
☐	8	☐	16	☐	24

Delete					
☒	1	☒	9	☒	17
☒	2	☒	10	☐	18
☐	3	☒	11	☐	19
☐	4	☐	12	☐	20
☐	5	☐	13	☐	21
☐	6	☐	14	☐	22
☐	7	☐	15	☐	23
☐	8	☐	16	☐	24

Diagnostics Menu and Submenus

Diagnostics	
	
Unit Status	>
Serial Port Status	>
Test Patterns	>
Setup Summary	>
Hours	>

Serial Port Status RS485	
	
<ENTER> to clear; +/- to select different serial port	
Commands Received	34
Replies Sent	34
Last Packet Type	Operation
Last Packet Address	Not Addressed
Bytes Received	921
Bytes Sent	773
UART Framing Errors	4
UART Overflow Errors	0
Group A Unit: 1	19200 Baud
Most Recent	
...115, 111, 108, 117, 105, 111, 110, 63, 13	
.st--1?.st--2?.st--3?.lcd.vertical-resolution?.	

Unit Status A1	
	
MX46L	1366 x 768
010-1168	Rev 02
LCD	Temperature 25 °C
	Backlight OK
	Voltage 24
Quad Module	Temperature 31 °C
	Fan Failed
Power Supply	PS1 OK Fan On
	PS2 OK
	PS3 OK
	PS4 OK
	Redundant OK

Note: The QUAD MODULE and POWER SUPPLY lines only appear on processor number 1 of each Quad Input Manager Module.

Test Patterns			
<ENTER> to select, None to show picture			
			
 None	 Red	 Red Scale	 Logo
 White	 Green	 Green Scale	 Grid
 Black	 Blue	 Blue Scale	 4x4 Contrast
 Gray	 Cyan	 Gray Scale	 Uniformity
 Custom Color	 Yellow	 Colors	 Focus
	 Magenta	 Color Bars	

Diagnostics Menu and Sub Menus (Continued)

Diagnostics		
Unit Status	>	
Serial Port Status	>	
Test Patterns	▷	
Setup Summary	>	
Hours	>	

Setup Summary						
Current Setup Information						
	Colorspace		RGB			
	Quad Module Route Code			682	2048	
	Wall		3 x 3	1:1		
	Scale/Justify		Fill Screen/Center			
	Postion/Overscan		100,100		/ 0%	
	Zoom UL/ LR		+0,+0		/	+0,+0
	Viewport UL/LR		+0,+0		/	+0,+0
	Sharpness		4			
	Black Level		109		109	109
	White Level		149		149	149
	Backlight Intensity					8
	White Balance		100		100	100
	Gray Balance		7		7	7
	Backlight Adjustment				+0	

Note: The WALL line will only appear on this menu if WALL MODE is checked in the BIG PICTURE SETUP menu.

Hours		
System Time	00636:45	
Backlight Time	00532:00	
Average Hours Per Day	0	
Number of Days > 20 Hours	0	

Note: The last two lines will only appear on the master (A1) display.

Advanced Options and Submenus

Advanced Options	
	
Color Balance	▶
Size and Position	▶
Miscellaneous Options	▶
Backlight Settings	▶
Serial Port Settings	▶
Set Clock / Schedule Events	▶

Color Balance	
	
Color Temperature Native	
  White Test Pattern	
 White Balance - All (Clipboard)	
Red	 -  +  100 (100)
Green	 -  +  100 (100)
Blue	 -  +  100 (100)
  Gray Test Pattern	
 Gray Balance - All	
Red	 -  +  7 (7)
Green	 -  +  7 (7)
Blue	 -  +  7 (7)
 Backlight Adjustment +0	
 Copy to Clipboard	
 Recall From Clipboard	
 Reset to Defaults	
  Remove Test Pattern	

Note: See page 128 for all of the submenus.

Size & Position	
	
Picture Position	▶
Zoom Window Top & Left	▶
Zoom Window Bottom & Right	▶
Viewport Window Top & Left	▶
Viewport Window Bottom & Right	▶
Reset All Windows to Default	
* *** Copy Settings to All Displays	

Note: The COPY SETTINGS TO ALL DISPLAYS line will only appear if this menu is on the master display (A1).

Advanced Options and Submenus (Continued)

Miscellaneous	
	
Cable Equalization 	
 Menu Timeout	Never Time Out
	Rotate Menu
	None
☒	(EDID) Plug and Play
☒	Allow Frame Lock

Note: See page 129 for all of the submenus.

Serial Port Settings	
	
ASCII Response Type	Symbolic
ASCII Response Terminator	CR
Baud Rate	19200

Backlight Control	
	
☒	Auto Backlight on
☐	Turn Backlight Off When No Source (DPMS)
DPMS Delay	1 hr
 Backlight Intensity	-  + 10

Set Clock / Schedule Events	
	
Press <ENTER> to set clock and schedule events	
Current Date/Time:	Tue Feb 28 2007 10:40
01 07:30	Daily Turn On
02 21:30	Daily Turn Off
03 12:30	Mondays Recall #04
04 16:00	Wednesdays Recall #23
05 02:00	Apr 1 2007 Clk +1 Hr
06 02:00	Oct 28 2007 Clk -1 Hr
07	
08	
09	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

Note: See page 130 for all of the submenus.

Size & Position Submenus

Size & Position

Picture Position

Zoom Window Top & Left

Zoom Window Bottom & Right

Viewport Window Top & Left

Viewport Window Bottom & Right

Reset All Windows to Default

*

Copy Settings to All Displays

Picture Position

Use arrow keys to move image

Horizontal Position

Vertical Position

168

19

Zoom Top & Left

Arrows move top and left

0

0

0

0

Image Resolution

This Unit

1366 x 768

681 x 384

Zoom Bottom & Right

Arrows move bottom and right

0

0

0

0

Image Resolution

This Unit

1366 x 768

681 x 384

Viewport Top & Left

Arrows move top and left

0

0

0

0

Display Resolution

Viewport

1366 x 768

1366 x 768

Viewport Bottom & Right

Arrows move bottom and right

0

0

0

0

Display Resolution

Viewport

1366 x 768

1366 x 768

Miscellaneous Submenu

Miscellaneous		
Cable Equalization		▷
 Menu Timeout	Never Time Out	
Rotate Menu		None
☒ (EDID) Plug and Play		
☒ Allow Frame Lock		

Miscellaneous		
Cable Equalization		1
* ***	Copy Settings to All Displays	

Note: The last line will only appear on the master (A1) display.

Set Clock/Schedule Events Submenu

Set Clock / Schedule Events



Press <ENTER> to set clock and schedule events

Current	Date/Time:	Tue	Feb	28	2007	10:40
01	07:30	Daily				Turn On
02	21:30	Daily				Turn Off
03	12:30	Mondays				Recall #04
04	16:00	Wednesdays				Recall #23
05	02:00	Apr 1	2007	Clk +1 Hr		
06	02:00	Oct 28	2007	Clk -1 Hr		
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Event # (0= set clock)	0
Frequency	Never
Action	No Action
Slot to Recall	1
Day of Week	Tuesday
Year	2007
Month	03
Date in Month	05
Hour	21
Minute	30

Program Information Menu



Note: The last line will only appear on processor number 1 of each Quad Input Manager Module.

Troubleshooting

Below is a troubleshooting table of some common issues you might encounter when installing or running your Runco WindowWall display wall.

What to look for	What you know if you see it	What to look for if you don't see it
Solid Green LED next to Video connection on LCD interface board (on the back of the display tile)	Video connection is good.	Check power connections to display tile and Quad Input Manager Module. Make sure Video and Comm connections are not swapped.
Blinking Green LED next to Comm connection on LCD interface board (on the back of the display tile).	Comm connection is good.	Check power connections to display tile and Quad Input Manager Module. Make sure Video and Comm connections are not swapped.
Power LED on front panel of the Quad Module is green. One address LED is lit.	Front panel is connected and working properly. Power is good to the Quad Input Manager Module.	Check power to Quad Input Manager Module. If you see more than one address LED lit (the ones on the circle) the system is doing an automatic update. Wait up to 20 minutes for it to complete. Do not turn off power during this time.
Blinking RS-485 light on all Quad Input Manager Modules except A.	RS-485 connections are good.	You must have one and only one 'A' Quad Module.
Green LED in Out Column for the display tile (LCD).	Video connection to display tile is good Comm connection to display tile is good 'A' Quad Module is powered on and cabled to this one via RS-485 All Quad Input Manager Modules have unique addresses.	If the LED is red, there is Comm connection but not video connection. It can take up to a minute for this LED to reflect the state of the system—you may need to wait if you have just turned on or changed connections.

All LCD backlights turn on with IR remote.	IR sensor is connected Quad Input Manager Module A is configured and cabled to the other Quad Input Manager Module (per your configuration). Comm connection to display tiles is good.	IR sensor must be plugged in to 'A' Quad Input Manager Module. Quad Modules must be cabled together via RS-485 There must be one and only one Quad Input Manager Module 'A' If a Quad Input Manager Module has been newly connected, you may have to turn off and then back on to synchronize those displays. If in doubt, A/C power cycle the system after all connections have been made.
"Info Pane" appears on all displays when menus are on. (The "info pane" is the gray square which shows the display address, position sensor information and information about the target menu).	Video connection is good. Equalization is set within reason.	If you see no video it all, the equalization could be bad If some displays do not respond, you may have out of date firmware. All Quad Input Manager Modules must have the same rev level of firmware.
UNIT STATUS menu appears on all displays when the MONITOR button is pressed.	Properly functioning display wall.	If a different menu appears on some displays, you may have mismatched firmware. All Quad Input Manager Modules must have the same rev level of firmware, and that firmware must be "cloned" to all 4 of the processors.
UNIT STATUS menu: Temperature is within reason. Backlight shows OK Voltage is >22 v	The display tile (LCD) and its interface board are functioning properly.	These three items are reported to the Quad Input Manager Module by the LCD interface board (on the display tile) over the Comm connection. If the voltage is 0 the voltage meter is not functioning on the LCD interface board (some early prototype systems did not have this meter). If the voltage is low, there may be too much drop in your power cables.
UNIT STATUS menu: Quad Module Temperature is within reason and Fan is OK.	The Quad Input Manager Module cooling system is operating normally.	This portion of the menu only shows up on processor 1 of a Quad Input Manager Module. Check for proper fan function and proper cooling of the rack.

UNIT STATUS menu: Power Supplies show OK and power supply fan is OK.	The power supply that is being monitored by this Quad Input Manager Module is operating normally.	This portion of the menu only shows up on processor 1 of a Quad Input Manager Module. If the message "PS Mon cable is not connected" shows in this menu, there is no power supply monitor cable connected. Connect the RJ45 on the back of the Quad Input Manager Module to that on the power supply module. The Quad Input Manager Module knows which power supply type it has by internal configuration jumpers. If it is reporting failures for supplies that aren't there, these internal jumpers could be configured wrong.
WindowWall Layout Auto completes correctly.	Position Sensors are aligned and working correctly.	Look at the Info Pane of each display. It shows you its position as reported by the LCD interface board (on the back of the display tiles). These numbers update about once a second. A display tile (LCD) in service mode will not report the correct position. If a display on the top row shows a row other than 1 or a display on the left side shows a column other than 1, then light energy is causing a false reading. This can happen with some fluorescent lights. Cover the position sensor hole from receiving light. Each row should show columns in order from left to right. If the column number starts again at 1, there is a problem either with the receiver of that display or the transmitter of the display next to it. Check for proper alignment of the displays. Similarly each column should show row numbers in order from top to bottom.
WindowWall layout shown in menu matches the true physical layout.	Comm and Video connections are paired correctly.	If the layout shown in the menu looks correct, but the rows or columns are out of order when looking at the position sensor information in the info pane, then the COMM connections to one or more pairs of displays have been crossed. If the layout shown in the menu is different than that shown by looking at the addresses on the info panes, then the VIDEO connections to one or more pairs have been crossed.

< > buttons on the IR remote move a slave menu sequentially to each display in the display wall.	Auto Layout has been performed.	If Auto Layout has not been completed or had errors, the menu will appear on each display in address order (A1, A2,A3). If no display is connected for a particular address, the menu will “disappear”. Press the arrow key again to move it to the next one until it comes back. You can see which display is being addressed by watching the info pane on any display. Once auto layout has been done, Quad Modules that are not connected will be ignored, so it will be helpful to attempt auto layout even if the position sensors are not working.
---	--	---

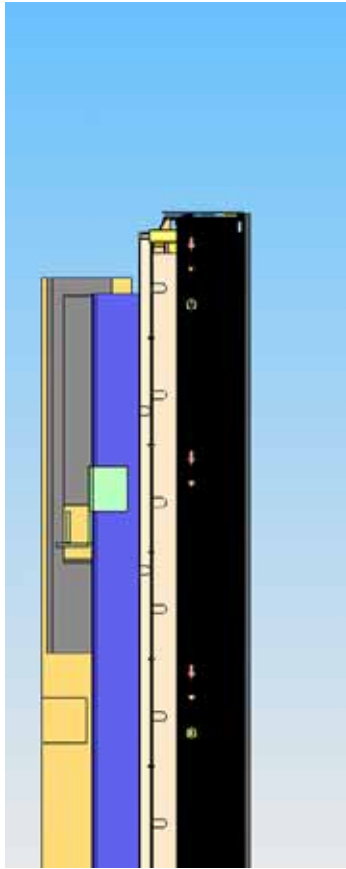
Servicing

When LCD tiles need to be accessed or removed, this can be accomplished without removing other LCDs in the wall. Starting at the top of the wall, LCDs can be pulled up and out to place them in service mode, allowing the LCDs below to be accessed.

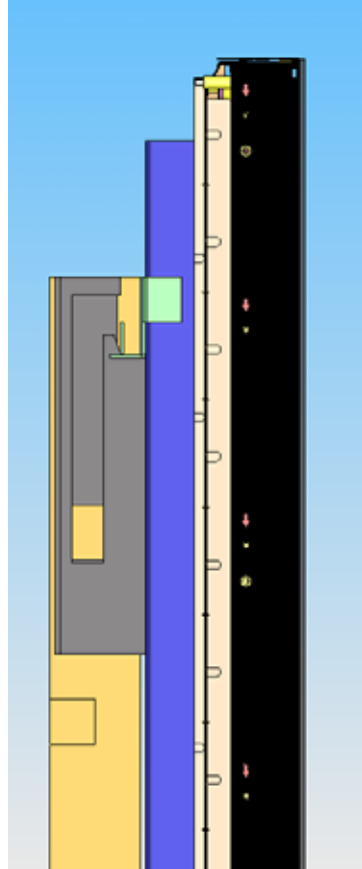
Within each LCD tile, the simple interface board can be disconnected and replaced using thumbscrews with access from either the front or the back of the wall. LCDs can also be completely removed and replaced very quickly. Because of their streamlined design, they weigh less than typical LCD displays and are more easily handled.



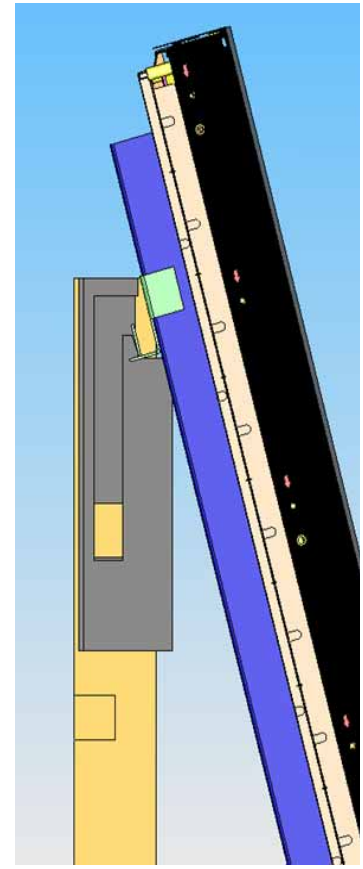
Caution: When in service mode, **do not unplug the power cable while the LCD is still on.** Use the remote control to turn off the LCD and **then** unplug the power cable. If you unplug the power cable when the LCD is still on, it could damage the LCD.



LCD tile installed



LCD tile between installed and service mode



LCD tile in service mode

Specifications

LCD Tile Specifications

Specification	LCD Tile		Shipping Weight	Shipping Dimensions	Notes
Dimensions	in/lbs	mm/kg		2 LCDs per box:	
Width	40.4"	1026mm		142 lbs (64kg)	
Height	22.8"	579mm		47" x 18" x 32.5"	
Diagonal overall	46.3"	1176mm		(1194mm x 457mm x 826mm)	
Depth	4.14"	105mm			
Weight	48lbs	22kg			
LCD Mount					
Width - Landscape	30.9"	785mm			
Height - Landscape	20"	508mm			
Width - Portrait	21.9"	556mm			
Height - Portrait	20"	508mm			
Weight	13lbs	6kg			
Orientation	Landscape or portrait				
Maximum stack height landscape portrait	unlimited				
Rear clearance required	none				
Aspect ratio	16:9 (landscape) 9:16 (portrait)				
Backlight life	50,000 (half brightness)				

Quad Input Manager Module Specifications

Specification	Quad Input Manager Module		Connector	Notes
Dimensions	in/lbs	mm/kg		
Width	19"	483mm		
Height	1.7"	43.2mm		
Depth	18.2"	462mm		
Weight	12lbs	5.4kg		
Power In			MiniFit	24V, 5A
RS232 In/Out			RJ45	
RS485 In/Out			RJ45	
Video Input			DVI-D	
Dual Link In			DVI-D	
Video Loop Out			DVI-D	
IR			3.5mm	
PS Mon			RJ45	
Video Out			RJ45	
Communication Out			RJ45	

Power Supply Module Specifications

Specification	Power Supply Module		Connector	Notes
Dimensions	in/lbs	mm/kg		
Width	19"	483mm		
Height	3.5"	89mm		
Depth	18.6	472mm		
Weight				
2 modules	18lbs	8.2kg		
3 modules	21lbs	9.5kg		
4 modules	24lbs	11kg		
5 modules	27lbs	12.2kg		
Power In			C20 AC Inlet	
Output to Quad Input Manager Module			MiniFit	
Output to LCD tile			MiniFit (Qty = 4)	

Power Supply Module Specifications (Continued)

Specification	Power Supply Module	Connector	Notes
PS Monitor Output		RJ45	
Input Ratings			
Input voltage		100-264 VAC	
Input frequency		47-63 Hz	
Input current			
115 VAC		20A	
230 VAC		5A	
Inrush current			
115 VAC		30A	
230 VAC		60A	
Output Ratings			
Output voltage		24 VDC	
Output current		13A per LCD tile 5A per Quad Input Manager Module	Maximum

LCD Optical Specifications

Specification	Maximum	Minimum	Typical
Screen brightness			500 cd/m
Contrast ratio		2500:1	3000:1
Uniformity		75%	
Viewing Angle, horizontal & vertical			±178°
Color gamut			72% NTSC 100% EBU
Color CIE - Native			
Red (x,y)			0.648, 0.328
Green (x,y)			0.271, 0.599
Blue (x,y)			0.143, 0.060
White (x, y)			0.280, 0.290
Color Temperature Presets			3200K, 5500K, 6500K, 8500K
Native color temperature			10,000K
Number of colors			16.7M
Native resolution			1366 x 768 pixels

Environmental Specifications

Specification	Maximum	Minimum	Optimal	Notes
Temperature				
operating, LCD tile	35° C 95° F	0° C 32° F	20° C +/- 3° C	All performance specifications are maintained within this temperature range.
operating, Quad Input Manager Module	45° C 113° F	10° C 50° F	20° C 68° F	
operating, Power supply module	45° C 113° F	10° C 50° F	20° C 68° F	
non-operating, LCD tile	50° C 122° F	-20° C -4° F	20° C +/- 10° C	
non-operating, Quad Input Manager Module	85° C 122° F	-20° C -4° F		
non-operating, Power supply module	85° C 122° F	-20° C -4° F		
Altitude (barometric pressure)	2000m			Above sea level, or equivalent barometric pressure. De-rate temperature 10° for every 1km above 1000m.
Humidity				
operating, LCD tile	80% R.H.	20% R.H.		non-condensing
operating, Quad Input Manager Module	80% R.H.	20% R.H.		
operating, Power supply module	80% R.H.	20% R.H.		

Signal Compatibility

Video Mode		Vert. Rate (Hz)	Hor. Rate (KHz)	Pixel Freq. (MHz)	Pixels Per Line	Scan Type	Frame Lock	Digital Input Connector
VESA	VGA 640 x 480	60	31.469	25.175	800	Progressive	Yes	✓
		72	37.861	31.500	830	Progressive	No	✓
		75	37.500	31.500	840	Progressive	No	✓
		85	43.269	36.000	832	Progressive	No	✓
	SVGA 800 x 600	56	35.156	36.000	1024	Progressive	No	✓
		60	37.879	40.000	1056	Progressive	Yes	✓
		72	48.077	50.000	1040	Progressive	No	✓
		75	46.875	49.500	1056	Progressive	No	✓
		85	53.674	56.250	1048	Progressive	No	✓
	XGA 1024 x 768	50	40.600	54.570	1344	Progressive	Yes	✓
		60	48.363	65.000	1344	Progressive	Yes	✓
		60	47.816	63.500	1328	Progressive	Yes	✓
		70	56.476	75.000	1328	Progressive	No	✓
		75	60.023	78.750	1312	Progressive	No	✓
		85	68.677	94.500	1376	Progressive	No	✓
	848 x 480	60	31.017	33.684	1086	Progressive	Yes	✓
	852 x 480	60	31.726	34.010	1072	Progressive	Yes	✓
	1024 x 1024	60	32.331	42.677	1320	Interlaced	Yes	✓
VESA	1152 x 864	75	67.5000	108.000	1600	Progressive	No	✓
	1280 x 720	50	37.490	74.250	1650	Progressive	Yes	✓
		60	44.960	74.250	1650	Progressive	Yes	✓

Signal Compatibility

Video Mode		Vert. Rate (Hz)	Hor. Rate (KHz)	Pixel Freq. (MHz)	Pixels Per Line	Scan Type	Frame Lock	Digital Input Connector
VESA	1280 x 768	60	47.776	79.500	1664	Progressive	Yes	✓
		75	60.289	102.250	1696	Progressive	No	✓
		85	68.633	117.500	1712	Progressive	No	✓
	1280 x 960	60	60.000	108.000	1800	Progressive	Yes	✓
		85	85.938	148.500	1728	Progressive	No	✓
	SXGA 1280 x 1024	60	63.981	108.000	1688	Progressive	Yes	✓
		75	79.976	135.000	1688	Progressive	No	✓
		85	91.146	157.500	1728	Progressive	No	✓
	1360 x 768	60	47.720	84.750	1776	Progressive	Yes	✓
	1360 x 768	60	50.000	80.000	1600	Progressive	Yes	✓
VESA	1400 x 1050	60	65.317	121.750	1864	Progressive	Yes	✓
	1400 x 1050	59.94	65.200	122.480	1800	Progressive	Yes	✓
	1400 x 1050	59.94	64.720	100.970	1560	Progressive	Yes	✓
	UXGA 1600 x 1200	60	75.000	162.000	2160	Progressive	Yes	✓
		60	74.537	161.200	2160	Progressive	Yes	✓
	1680 x 1050	60	65.320	146.310	2240	Progressive	Yes	✓
	1680 x 1050	60	64.720	119.090	1840	Progressive	Yes	✓
	1920 x 1080	60	66.587	138.500	2080	Progressive	Yes	✓
	1920 x 1080	50	67.521	148.550	2640	Progressive	Yes	✓
	1920 x 1080	60	67.470	148.550	2200	Progressive	Yes	✓

Signal Compatibility

Video Mode		Vert. Rate (Hz)	Hor. Rate (KHz)	Pixel Freq. (MHz)	Pixels Per Line	Scan Type	Frame Lock	Digital Input Connector
	1920 x 1200	50	61.800	158.220	2560	Progressive	Yes	✓
	1920 x 1200	55	66.230	139.870	2112	Progressive	Yes	✓
	1920 x 1200 RB*	60	74.020	148.040	2000	Progressive	Yes	✓
SDTV	NTSC (720 x 480)	59.94	15.734	13.500	858	Interlaced	Yes	
	PAL (720 x 576)	50	15.625	13.500	864	Interlaced	Yes	
	480i (720 x 480)	59.94	15.730	13.500	858	Interlaced	Yes	✓
	576i (720 x 576)	50	15.625	13.500	864	Interlaced	Yes	✓
HDTV	480p (720 x 480)	59.94	31.466	27.000	858	Progressive	Yes	✓
	576p (720 x 576)	50	31.250	27.000	864	Progressive	Yes	✓
	720p	50	37.500	74.250	1980	Progressive	Yes	✓
		59.94	44.964	74.250	1650	Progressive	Yes	✓
	1080i	24	26.997	74.250	2750	Interlaced	No	✓
		25	28.121	74.250	2640	Interlaced	Yes	✓
		30	33.749	74.250	2200	Interlaced	Yes	✓
	1920 x 1080	24	26.990	74.250	2500	Progressive	No	✓
		25	28.200	74.250	2750	Progressive	No	✓
		30	33.750	74.250	2750	Progressive	No	✓

Note: This is the minimum supported signal mode table. Signal timings and formats other than those listed above may also be supported.

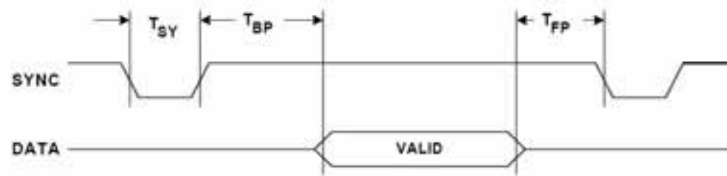
* RB = Reduced Blanking

Note: See the Runco DHD3 manual for additional video modes.

Input Minimum Sync and Blanking Specifications

Parameter	Symbol	Minimum Horizontal Setting	Minimum Vertical Setting
Sync pulse width	T _{SY}	2 pixels	2 lines
Sync back porch width	T _{BP}	20 pixels 64 (tri-level sync)	3 lines
Sync front porch width	T _{FP}	1% of HRes	1 line

Note: The following illustration shows the timing characteristics for the Input Sync, Front Porch and Back Porch.

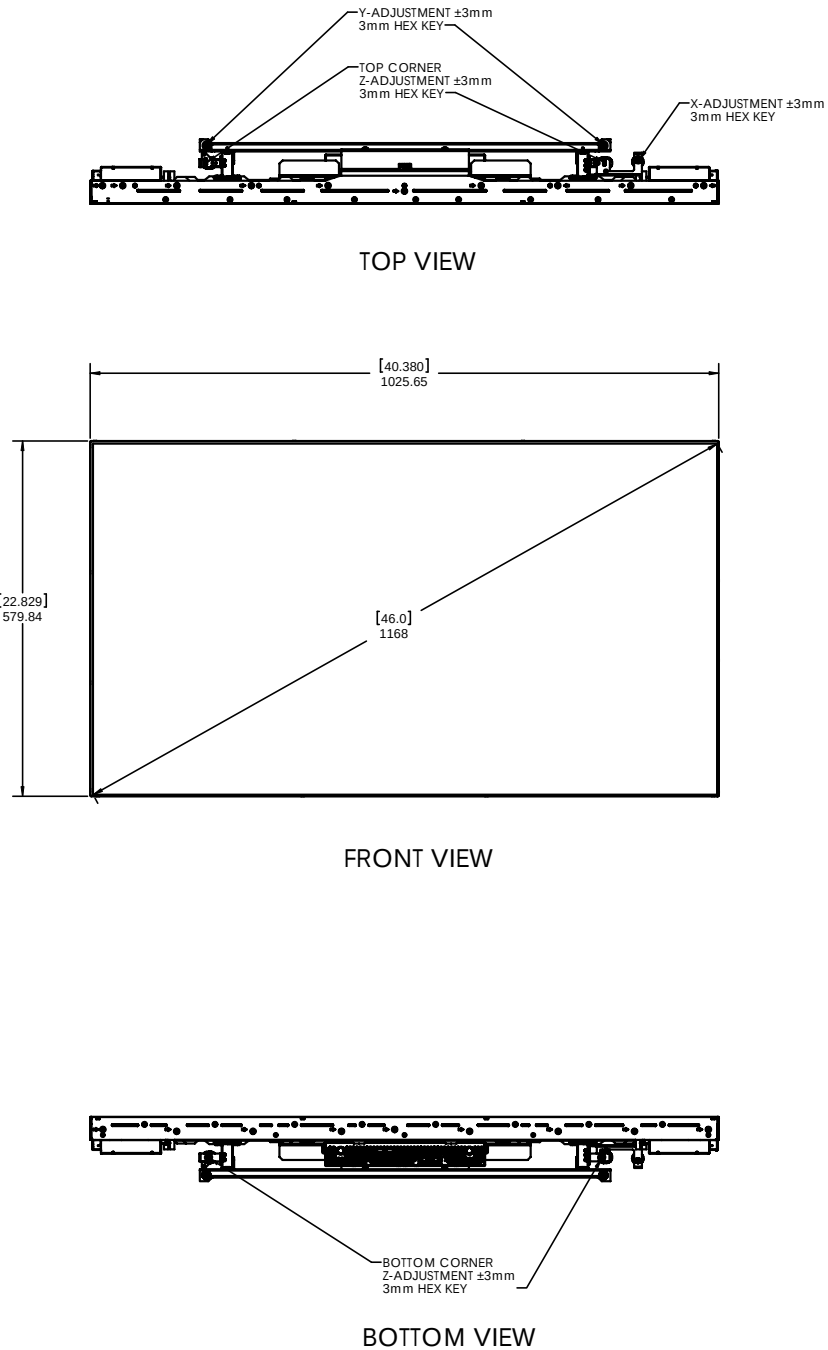


Dimensions

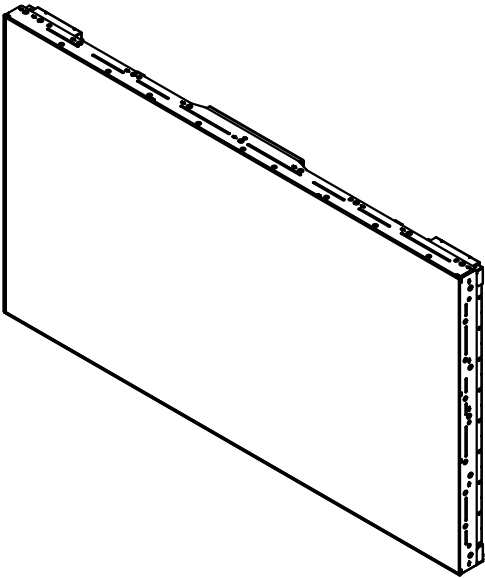
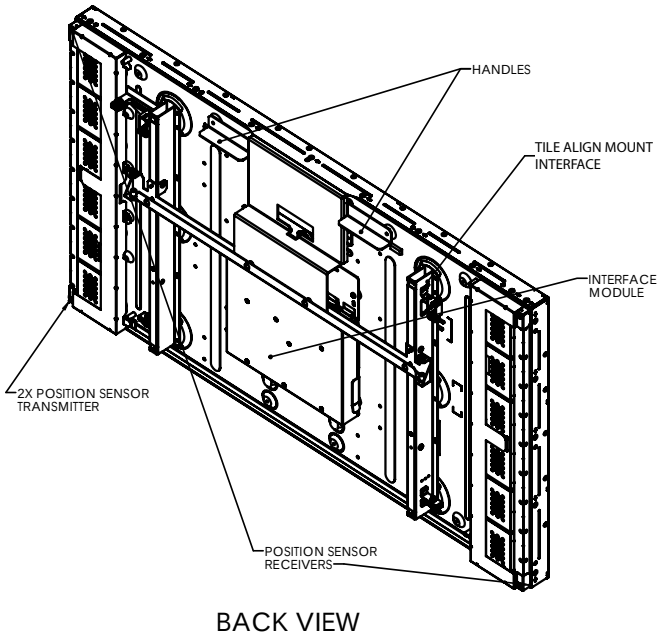
LCD Tile Dimensions

Diagrams and CAD drawings of the particular WindowWall configurations are posted at www.runco.com.

LCD Front View - Landscape

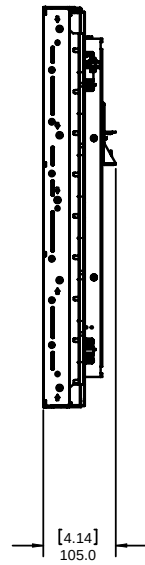


LCD Rear View - Landscape

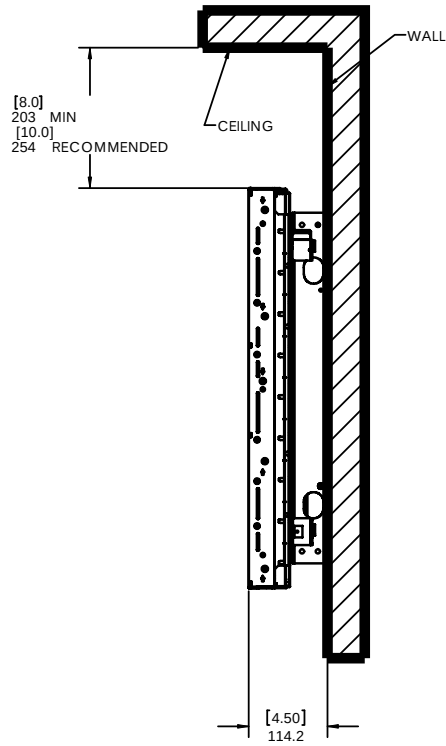


LCD Side View - Landscape

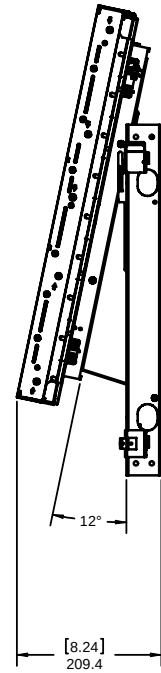
WITHOUT MOUNT



WITH MOUNT

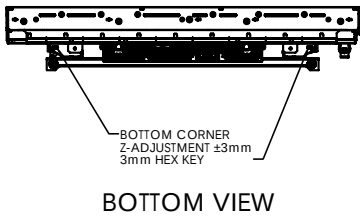
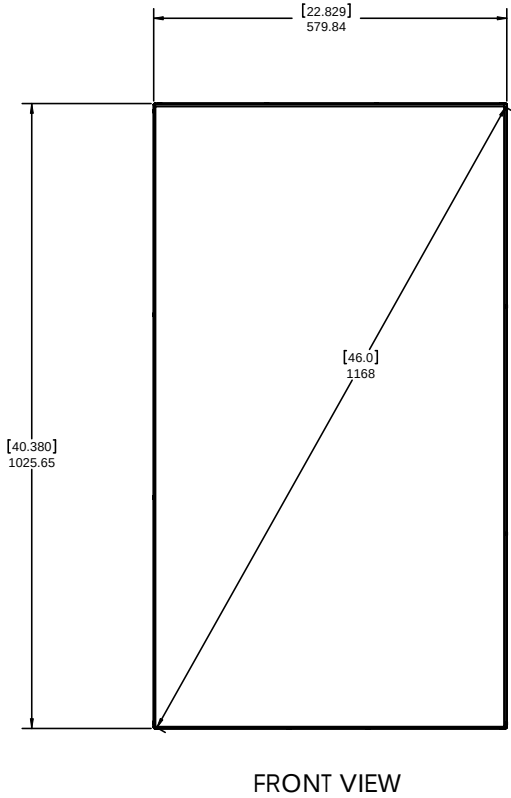
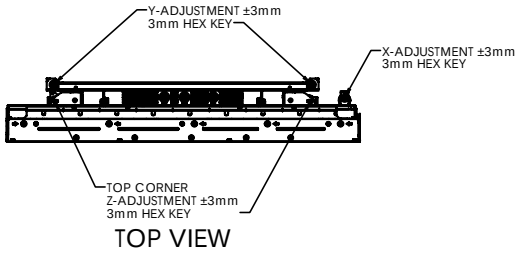


SERVICE MODE

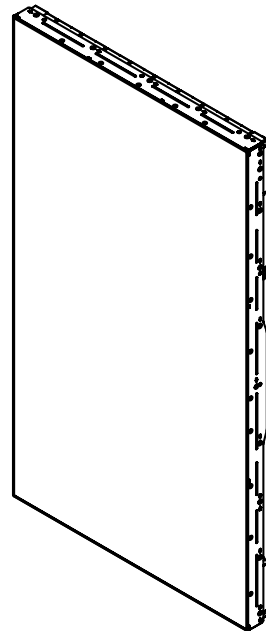
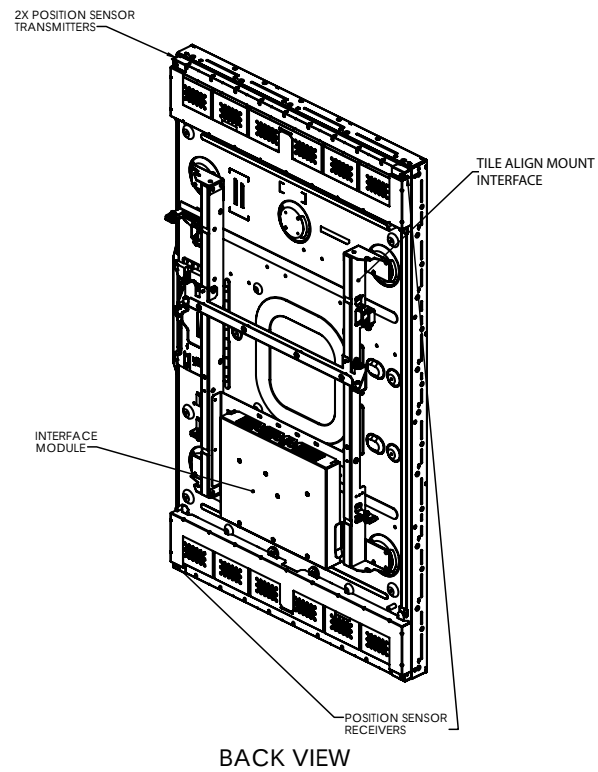


SIDE VIEWS

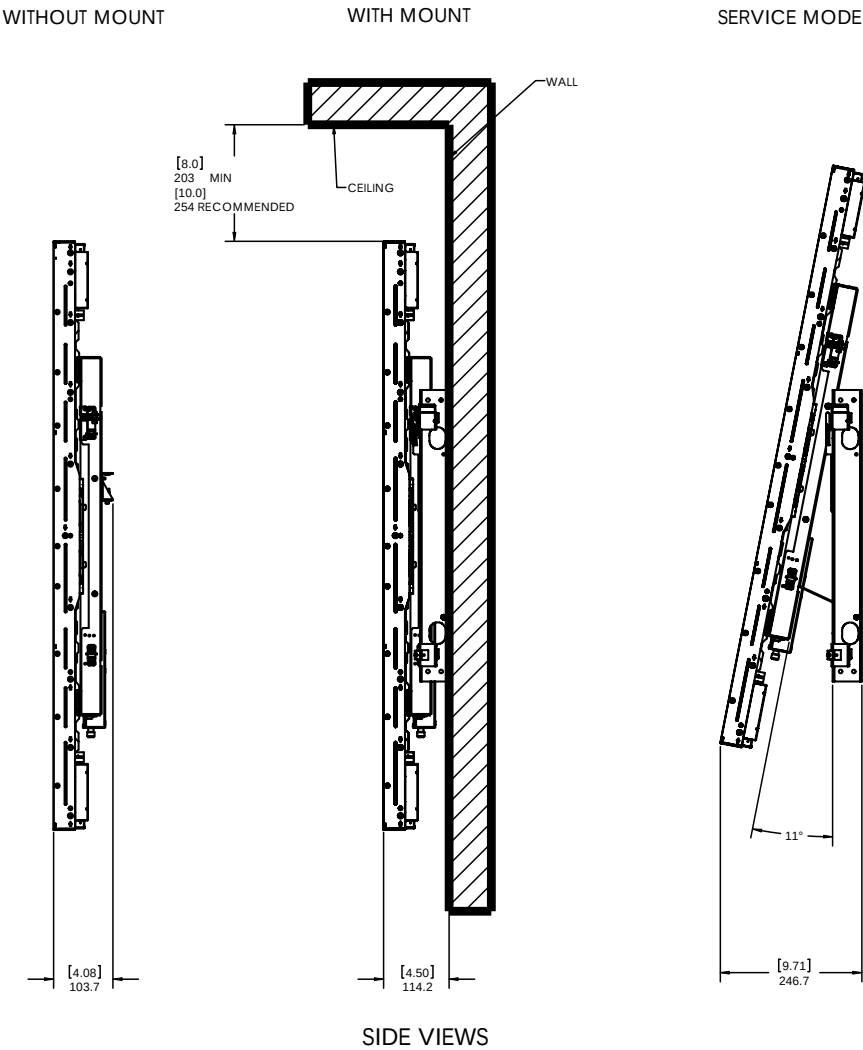
LCD Front View - Portrait



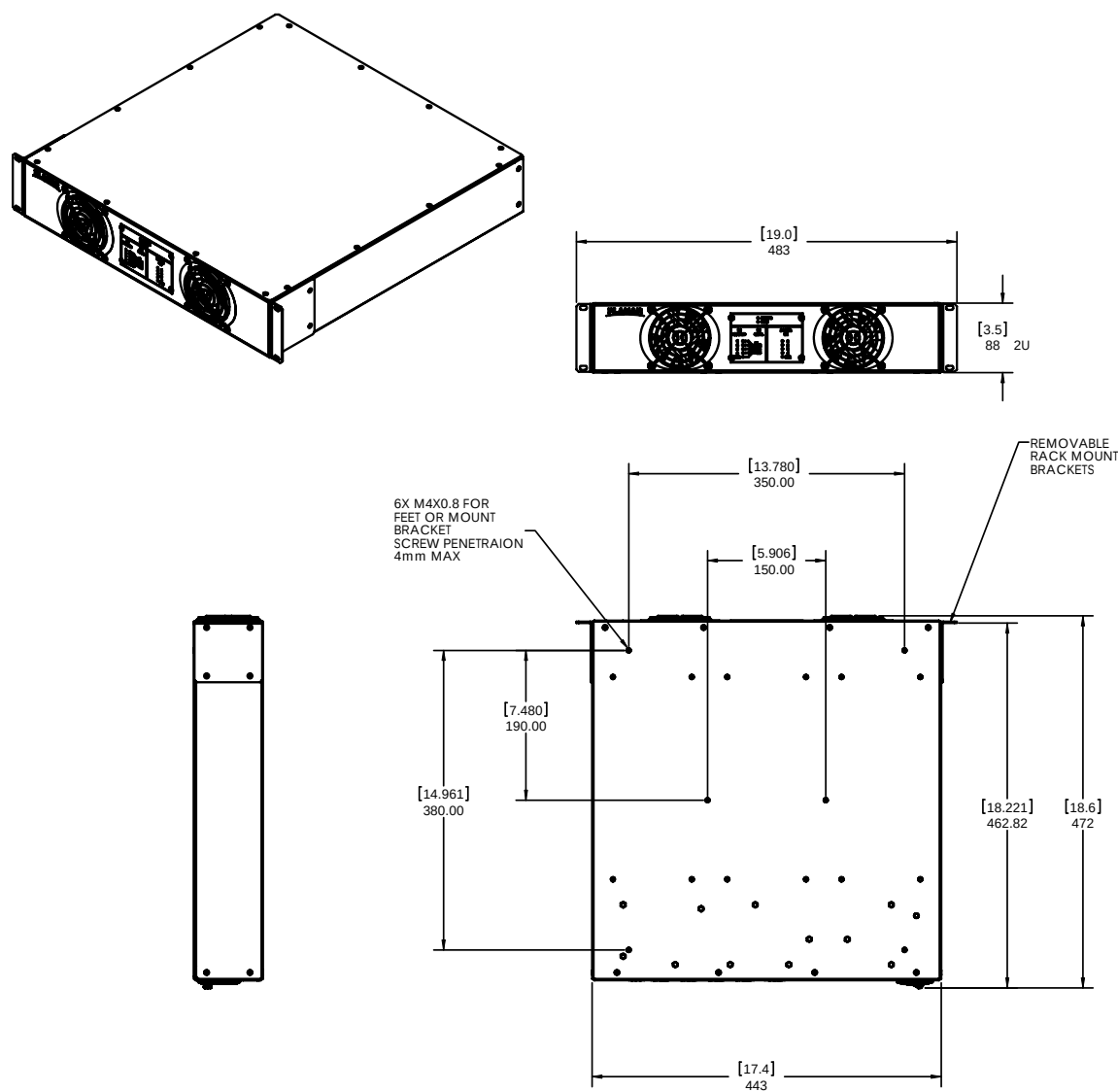
LCD Rear View - Portrait



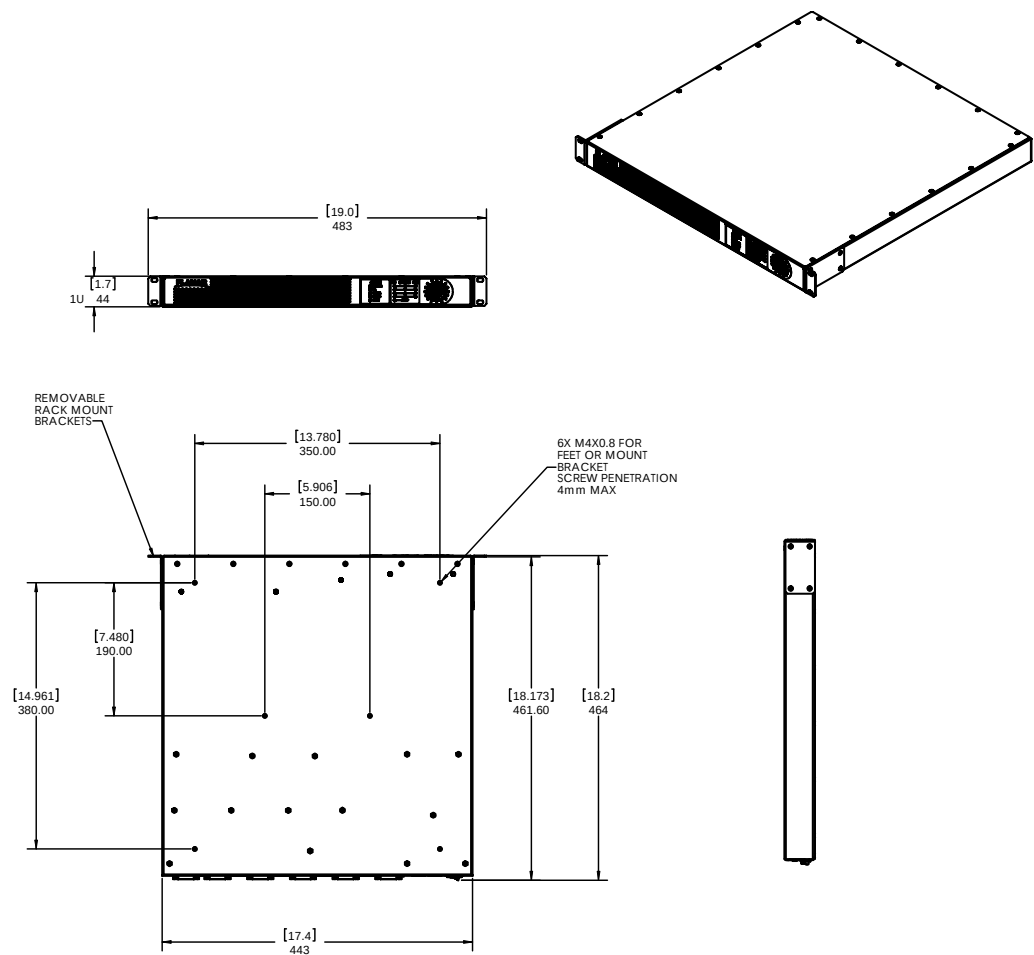
LCD Side View - Portrait



Power Supply Module Dimensions



Quad Input Manager Module Dimensions



Accessories

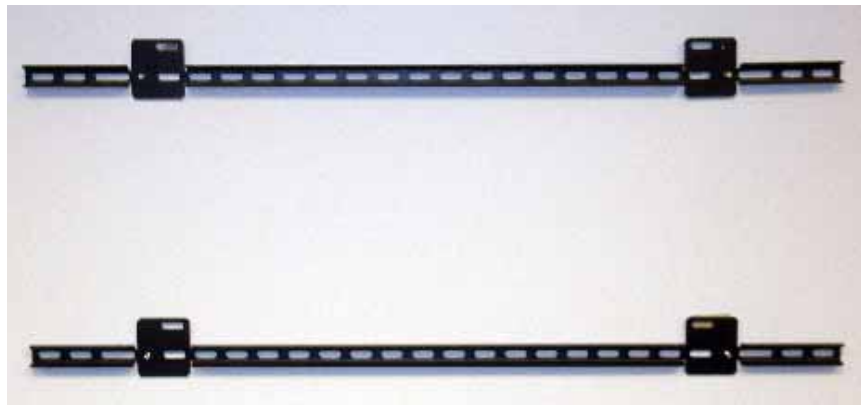
The follow sections describe how to install the following accessories:

- Wall Adapter Bracket - See "Wall Adapter Bracket" on page 155.
- Cosmetic Trim - See "Cosmetic Trim" on page 158.
- Floor Stand - See "Floor Stand" on page 160.

Wall Adapter Bracket

For each LDC module, the stud adapter bracket kit contains the following items:

- Two adapter brackets

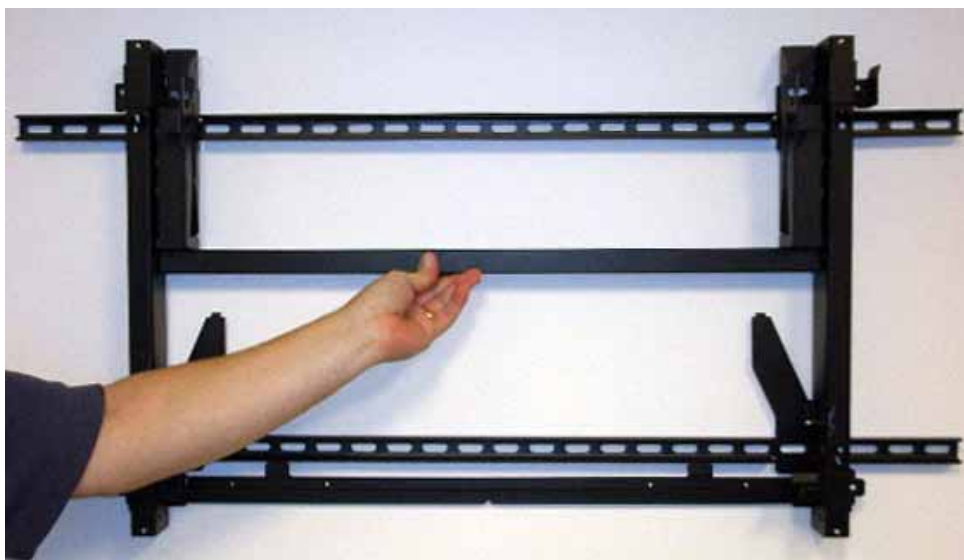


- Four M6 nuts/washers

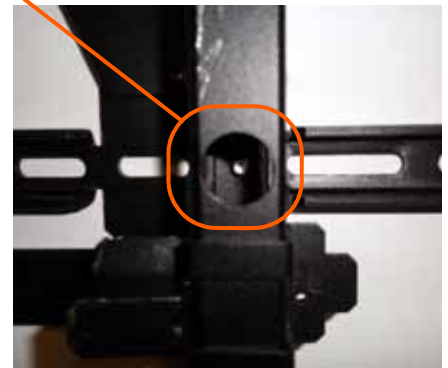
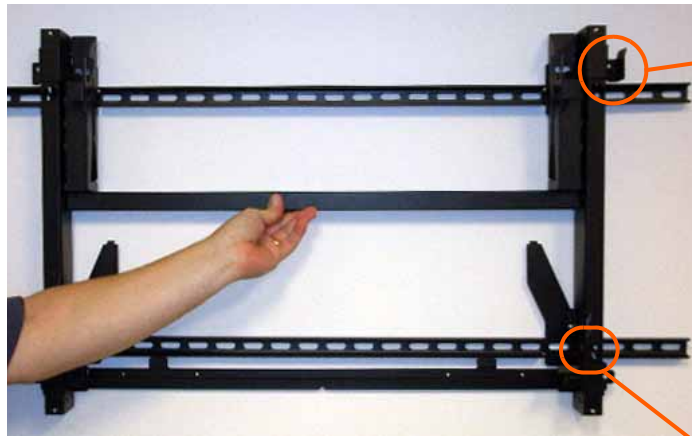


- 1 For each LCD tile, mount two adapter brackets to the wall.

- 2 Install the LCD mount on the adapter brackets.



- 3** Install an M6 washer/nut in each mount point of the LCD mount.



- 4** Repeat steps **1-3** for each LCD tile that you want to mount to a wall.

Cosmetic Trim

For each LDC module, the cosmetic trim kit varies depending on your order:

- Left/Right, Top/Bottom Trim
- M4 x 10 Phillips flathead black screws

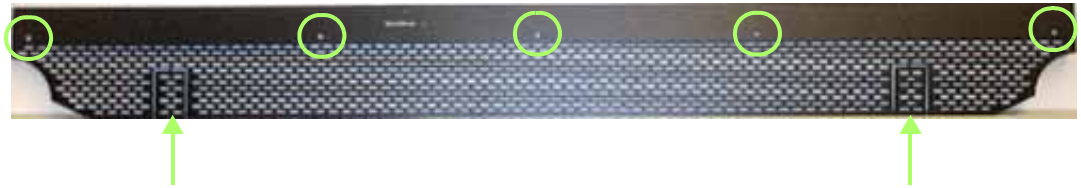
- 1 Using three M4 x 10 flathead screws for each piece of cosmetic trim, install the left and right trim for each outer LCD tile of the video wall.



- 2 Using five M4 x 10 flathead screws for each piece of cosmetic trim, install the top trim for each LCD tile in the outer top row of the video wall.



- 3** If using a floor stand, remove the two tabs in metal.

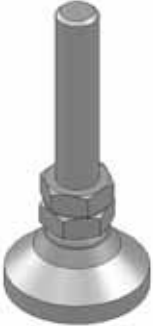


- 4** Using five M4 x 10 flathead screws for each piece of cosmetic trim, install the bottom trim for each LCD tile in the bottom row of the video wall.

Floor Stand

These instructions explain how to assemble the Runco WindowWall column floor stand. Each column floor stand and its related accessories are shipped in one box. Below is a list of all of the parts that you should find in your box. The parts are in two wrapped bundles. Check the contents of the box to make sure you have received all of the parts.

Part	Picture
Cross support (1)	
Legs (2)	
Feet (2)	
Assembly tool (1)	
Mount adapter brackets (2 pre-assembled with feet)	
Floor anchor (4)	

Leveling feet (4)	
1/4-20 flange button head screws, lock washers and t-nuts (4)	
m6 hex nuts (6)	
m6 x 12mm button head screws (2)	
End caps (4) with push in hardware	
m6 x 40 screws (4)	
Washers (8)	
4mm ball end hex driver (1)	
3/16" Allen key (1)	

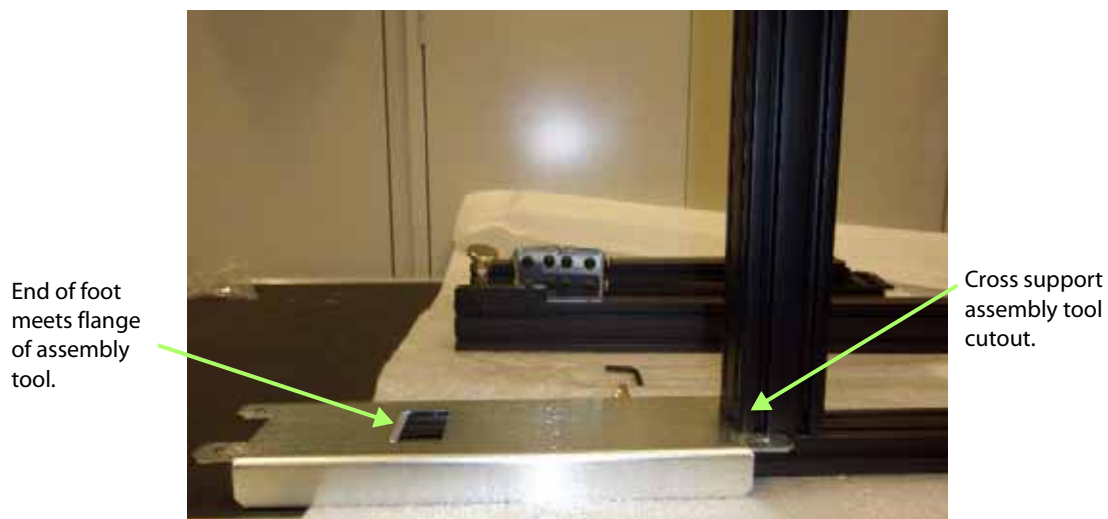
Assembling the Column Floor Stand

Use the following instructions to assemble the column floor stand.

- 1 Slide the cross support onto one foot.



- 2 The assembly tool is used to properly space pieces. Slide the assembly tool to meet the cross support. The support should slide to where it meets the assembly tool.



- 3 Using the ball end driver, tight two anchors on each side of the cross support.



Note: This is easier to do with the foot on its side.

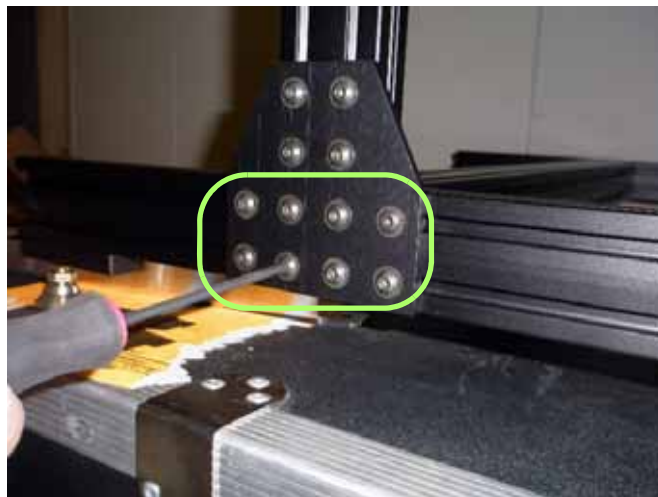
- 4 Remove the assembly tool.
- 5 Slide the cross support onto the other foot and repeat steps 1-4 for the other foot.



- 6** Take a leg and remove the adapter bracket to which it is attached. There are ten screws to remove.



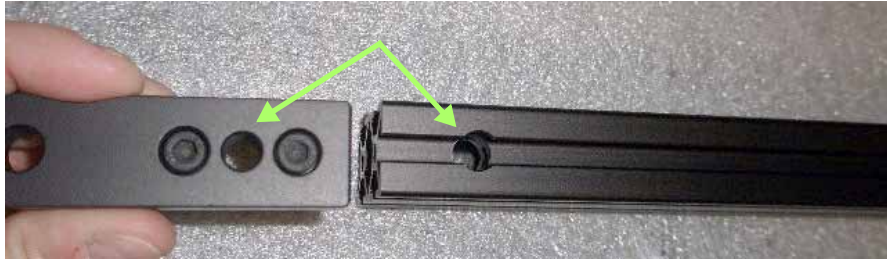
- 7** Slide that same leg onto the cross support. Use the assembly tool to line it up.
- 8** Tighten down the two anchors with the ball end driver.
- 9** Tighten eight screws on the side.



- 10** Repeat steps **6-9** for the other leg.

11 Do one of the following:

- If you are going to anchor the column floor stand base to the floor, slide the anchor bracket until the holes line up.



- If you are not going to anchor the column floor stand base to the floor, attach the anchor so it is not protruding from the foot.

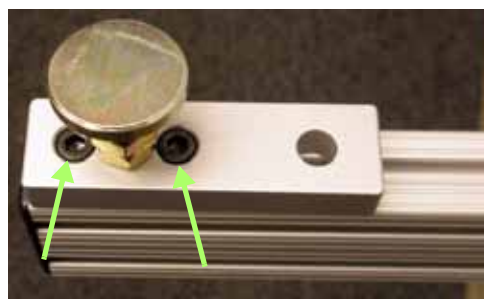
**12** Screw in the leveling feet.

Note: The non-anchored position is shown.

- 13** Tighten the two 1/4 20 cap screws with a 3/16" Allen key.

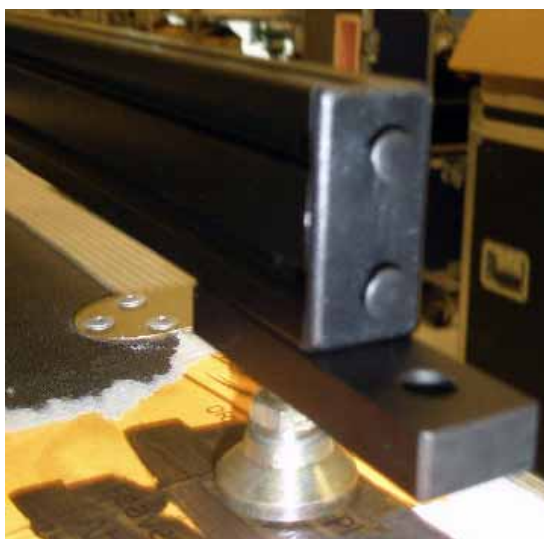


As seen from the side.



Note: This picture shows a silver column floor stand. Yours will be black.

- 14** Install the end caps with the push in hardware.



- 15** Repeat steps **11-14** in the remaining column floor stand corners.
- 16** If you need to properly space multiple column mounts horizontally, proceed with steps **17-18**. Otherwise, go to step **19**.

- 17** Install four 1/4-20 button head flange screws, t-nuts, and washers on the assembly tool.



- 18** Slide the assembly tool over the leg and make sure it is all the way against the leg. Tighten the button head flange screws that will attach to the leg.



This side attaches to the next column floor stand prior to assembly of the adapter brackets.

- 19** Attach the adapter bracket to the LCD mount using an M6 x 12 button head screw and nut.

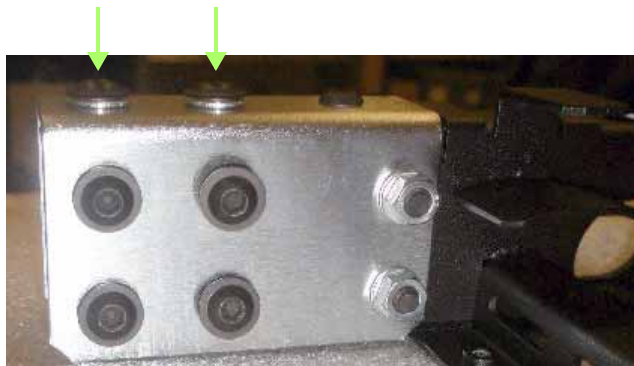


- 20** Loosely attach the side of the bracket with M6 x 40 screws, washers, lock washers and nuts.
- 21** Repeat steps **19-20** for the other side.

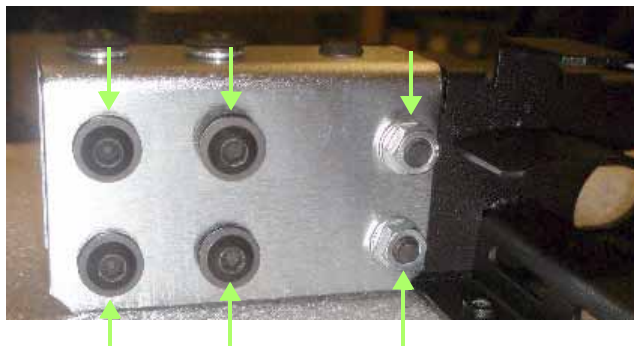
- 22** Slide the adapter brackets on top of the column floor stand until the LCD mount is seated on top of the column floor stand.



- 23** For both brackets, tighten the screws in the front first.



- 24** For both brackets, tighten all of the other screws on both sides.



Accessing Additional Runco Resources

A wealth of information is available at www.runco.com. Additional resources are on the Partner Portal site.

- 1 Go to <http://partners.runco.com>
- 2 Once you enter your login and password, you can access downloadable utility software, new firmware, user manuals, and service manuals.

Downloading Additional Documentation and Firmware

Some of the other documents for the Runco WindowWall, which are or will be available from the Runco website, are listed below:

Document Name	Contents
Installation Guide	Information for installers and technicians to install and configure displays.
RS232 Reference Manual	Technical information about the product, such as display mode information and how to use RS232 commands to control displays.
Configuration diagrams	Shows particular packaged all configurations.
CAD drawings	Shows particular packaged all configurations.

Regulatory Information

Manufacturer's Name: Runco
Manufacturer's Address: 1195 NW Compton Drive
Beaverton, OR 97006

Declares that the products Model Numbers:MX46L (Direct-view LCD)

Conforms with the provisions of:

Council Directive 2004/108/EC on Electromagnetic Compatibility;

EN55022:2006 Radiated and Conducted Emissions from IT Equipment

EN55024:1998 Immunity of IT Equipment

Including:

EN61000-4-2	Electrostatic Discharge
EN61000-4-3	Radiated Immunity
EN61000-4-4	Electrical Fast Transients
EN61000-4-5	Line Surge
EN61000-4-6	RF Conducted Susceptibility
EN61000-4-8	Magnetic Field Immunity
EN61000-4-11	Voltage Dips and Interrupts

And:

EN61000-3-2	Harmonic Current Emissions
EN61000-3-3	Voltage fluctuations and Flicker

Council Directive 2006/95/EC on Low Voltage Equipment Safety:

EN60950:2006 Safety of IT Equipment

The Technical Construction File required by this Directive is maintained at the corporate headquarters of Runco, 1195 NW Compton Drive, Beaverton, OR 97006.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada (ICES-003): This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Any changes or modifications to the display not expressly approved by Runco could void the user's authority to operate this equipment.

Other Certifications: CISPR 22

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